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AMERICAN Cinematographer

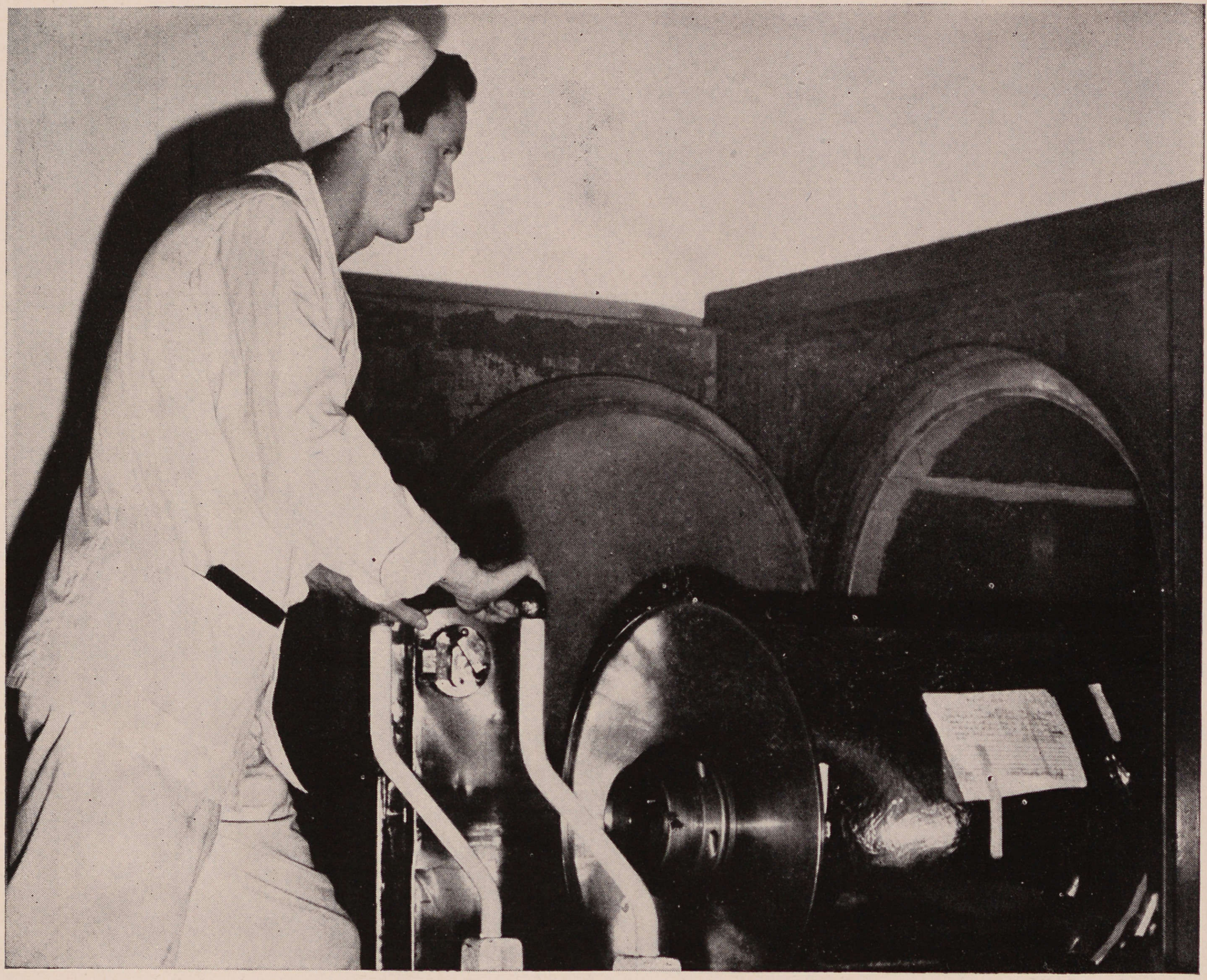
★ THE MOTION PICTURE CAMERA MAGAZINE ★

In this Issue . . .

The Television Camera

June
1945

(No. 7 of a series on the manufacture of Du Pont Motion Picture Film)



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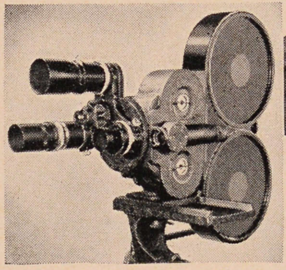

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AMERICAN CINEMATOGRAPHER

THE MOTION PICTURE **CAMERA** MAGAZINE

VOL. 26 JUNE, 1945 NO. 6

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THE FRONT COVER shows Director of Photography Arthur Miller, A.S.C., preparing to shoot a scene with Tallulah Bankhead and William Eythe in "A Royal Scandal" for 20th Century-Fox Studios. Miller is the man in a felt hat behind the camera.

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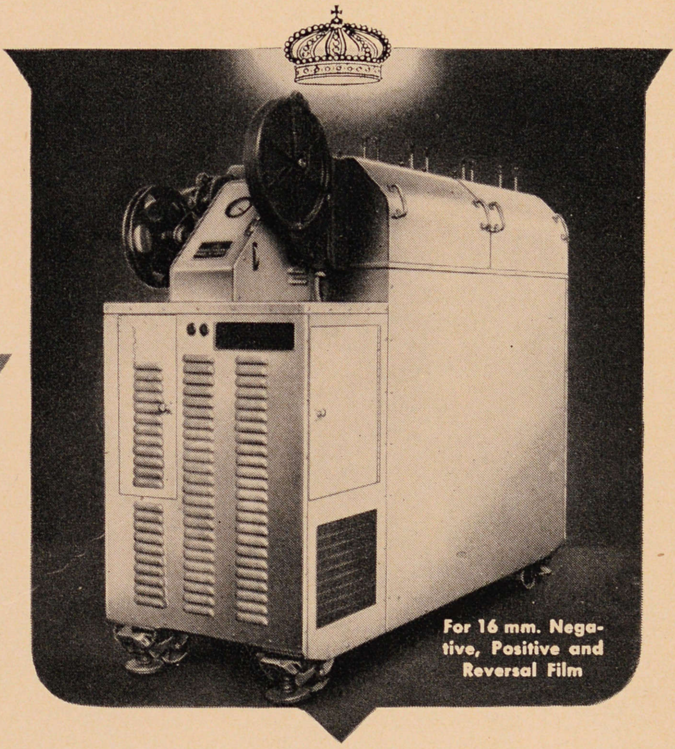

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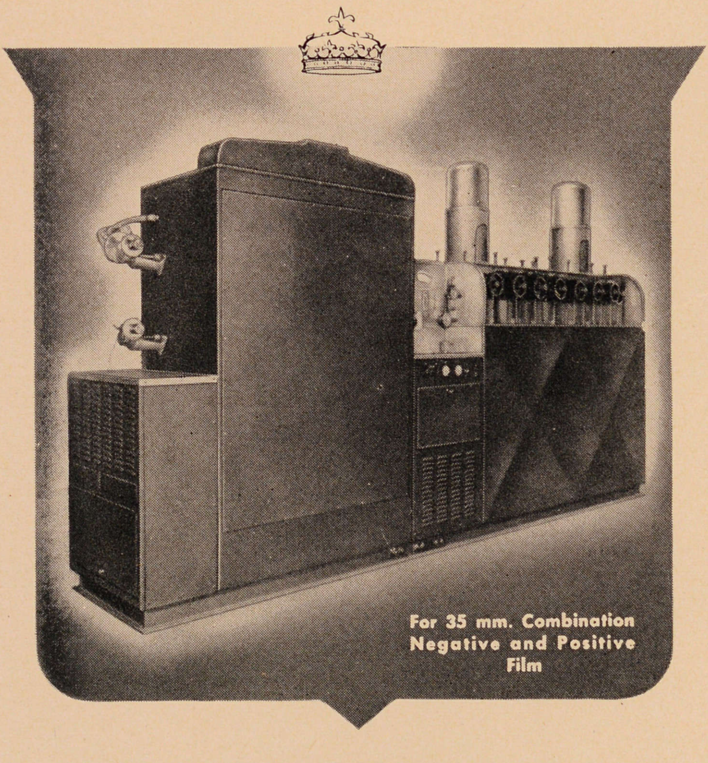

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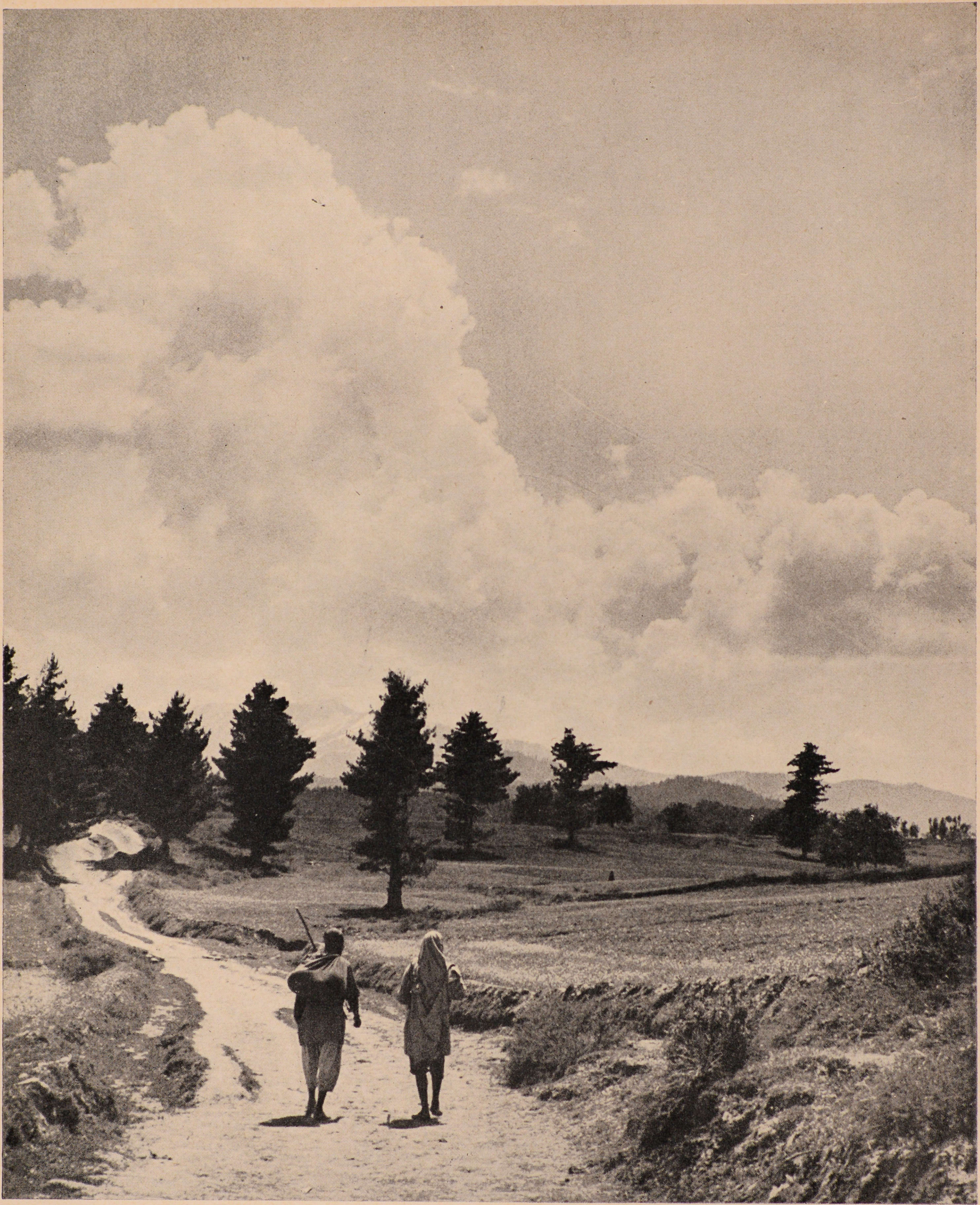

HOMEWARD BOUND

Photo by A. J. Patel, F.R.P.S., F.R.S.A.
Bombay, India

Aces of the Camera

HARRY PERRY A. S. C.

By HAL HALL

HARRY PERRY, A.S.C., is the only cameraman in Hollywood who can claim the unusual distinction of having slept in the swimming pool of an ocean liner. Not only did he sleep in the swimming pool, but he had as his sleeping neighbor no less a celebrity than Robert Montgomery.

No, it wasn't a lark, and neither of the above mentioned gentlemen had been gazing at the bottom of a cup that cheers. It was a situation brought about by the war. Harry was in Monte Carlo in 1939 making transparency background shots for David O. Selznick's "Rebecca." When the war broke out his French camera crew stopped work immediately and reported for military duty and he was forced to stop work and start for home as fast as possible. After many difficulties he found himself aboard the S. S. Washington where he was assigned a cot in the swimming pool. Montgomery was assigned the cot next to his. Every square inch of space on the ship was taken up with cots.

While Harry now goes quietly and efficiently about his photographic wizardry in the Transparency Department at Paramount Studios, he has in the past been one of the most globe-trotting globe-trotters in the ranks of Hollywood's ace cameramen. He says he hopes his travel days are over, and hopes to devote the remainder of his time to transparency work right in Hollywood.

Harry's cinematic history is interesting. It was in December, 1918, that he started on his first camera job. Alvin Wyckoff, A.S.C., was then head of the camera department at the old Lasky Studio on Vine Street, Hollywood. Alvin gave Harry a job as an assistant cameraman. For three years he was first an assistant and then a second cameraman, and shot stills along with his other work. Then Tom Forman was made a director and the first thing he did was to insist on my being made a first cameraman to shoot his first picture. Harry was a bit nervous about it, for Thomas Meighan was the star of the picture, and Harry felt that he might not be good enough to photograph so great a star. He did the picture to the great satisfaction of everybody concerned. In fact, he did it so well that he photographed seven pictures in a row starring Meighan, and directed by Forman.

It was while photographing these pictures that Harry started his travels. He went to Long Island to make three of them. Then to Boston and Maine to make "Cappy Ricks," to Ashville, N. C., to make "Conquest of Canaan," and to Sing Sing Prison to do "The City of Silent Men." Then he returned to California and left Lasky to go with B. P. Shulberg's producing company at the famous Selig Studio on North Broadway, Los Angeles, and at the old F.B.O. Studios which is now R.K.O. Studios.

Harry photographed eleven feature pictures for Shulberg. Among them were "April Showers," with Coleen Moore; "Shadows," with Lon Chaney; "The Virginian," with Kenneth Harlan and Florence Vidor; and "The Broken Wing," with Harlan and Marion Cooper.

In 1925 Perry returned to the Lasky Studio where he spent six months making preparations and building camera mounts for airplanes. Then he was made head cameraman on Billy Wellman's great air pictures, "Wings." It took more than a year to photograph that picture, and Harry at one time had ten first cameramen working under him. Five months were spent in San Antonio, Texas, with the Air Forces. All the flying shots with the principals, Buddy Rogers and Dick Arlen, were actually made in the air, as process background technique had not then been perfected. Harry put in more than 300 hours in the air on that film alone.

Perry followed "Wings" with another air picture, "Now We're in the Air,"

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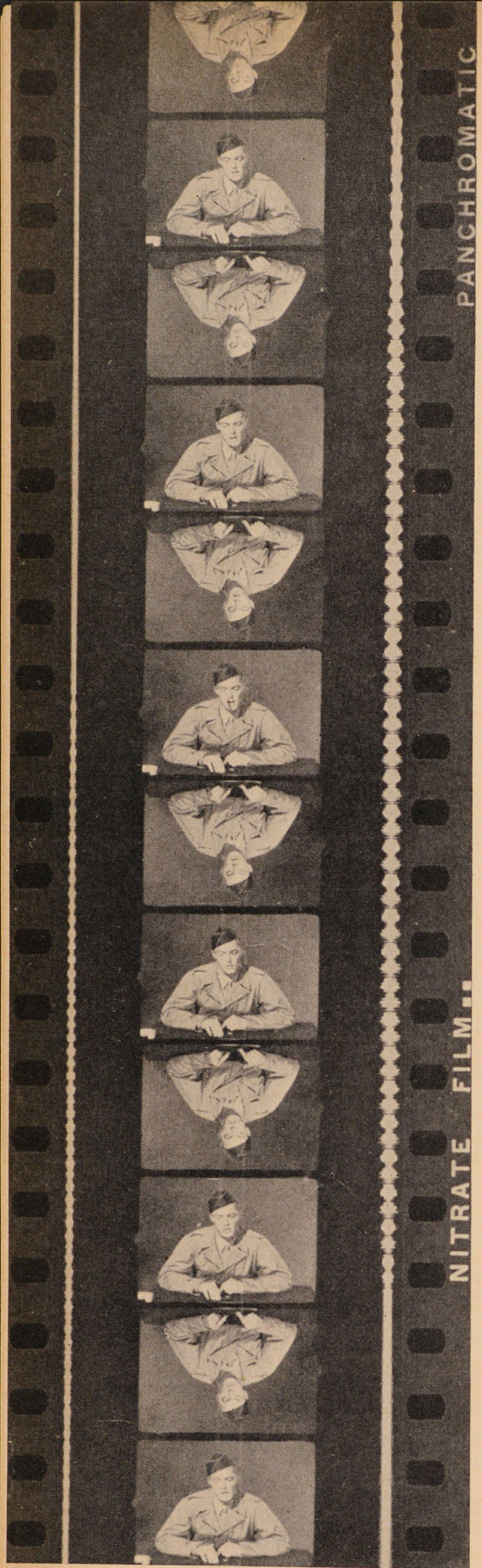


Above, sample of positive composite strip developed by the Mardovan Process on standard 35mm film. Note the standard width 35mm sound track's corresponding with each picture sequence and additional space for wider "scope" picture or additional full width 35mm sound tracks for "stereophonic" effects.

A Method of Film Conservation In Motion Picture Photography, Processing and Reproduction

By S. SGT. NICHOLAS V. MARDOVAN

18TH A. A. F. BASE UNIT (Motion Picture Unit)

MY invention relates to a method of photographing, printing and reproducing standard (conventional) 35 and/or 16 millimeter motion picture film using simple and inexpensive devices or attachments with existing 35 and/or 16 millimeter cameras, printers and motion picture or television projectors using either black and white or color film.

There have been several methods of attaining results similar to this invention, but none of these completely cover the entire art of producing motion pictures without the use of either specially perforated film stock or specially built equipment as I intend to differentiate specifically herein.

The first object of my invention is to conserve film by utilizing only standard (conventional) 35 and/or 16 millimeter motion picture film stock and equipment. Thus, apart from the present chronic shortage of film stock which will continue for a considerable period even after cessation of hostilities in Europe and elsewhere, my process enables motion picture, television and other users to cut their footage and resulting cost of film by practically fifty percent, particularly on color films. Hence, my invention is not just an idea evolved about some special film or special apparatus, but relates to the result of years of careful and definite planning, research and experimentation to incorporate the use of standard existing motion picture and television equipment.

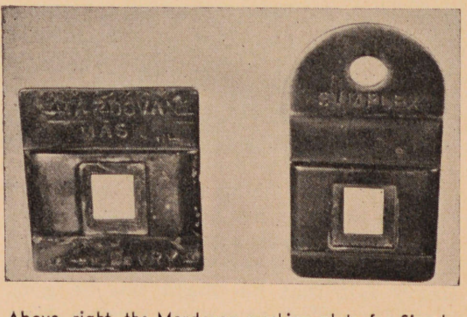
A further object of this invention is to provide an improved method of producing motion pictures, in either black and white or in color, in which the images are photographed in such a manner that the film may run through standard (conventional) 35 millimeter and/or 16 millimeter motion picture cameras, standard printers and standard motion picture and/or television projection machines at standard speeds without altering the conventional, present-day mechanical methods of sound reproduction, quality or effects, yet allowing ample space for one or more additional standard sound track or tracks running lengthwise, between and adjacent to each row of sprocket holes on opposite sides of the same strip of standard motion picture film, in either the same or in opposite directions to each other, without altering the width or length (speed) of a standard (conventional) 35 millimeter sound track for stereophonic effects.

Another object of this method and/or process is to provide a wider, lateral "scope" picture, if desired, for panoramic effects.

Another object of this method and/or process is to eliminate the necessity of rewinding the film after each reel has run through a projector; thereby, rendering motion picture projection more expeditious.

The method and/or process of my invention described herein, may be applied with equal success to any standard (conventional) 35 millimeter and/or 16 millimeter motion picture film or equipment.

The process photographs and/or prints two images into the space ordinarily occupied by one standard "Academy" 35 millimeter picture frame and portions of its borders, that is, since the height of one of these said reduced frames is approximately .365 of an inch, the sum of any two such picture frames would equal the total of four complete, standard, 35 millimeter sprocket holes in a standard 35 millimeter film; allowing about .009 of an inch for border spaces between said reduced picture frames. Ordinarily, the images are inverted to each other and their shorter dimensions are parallel to the film length. The images also appear in the precise center of the film width, or may appear in an off-center position for special effects. Therefore, the images appearing in the upright position on the film represent, for example, reels numbers one, three, five, etc., while the inverted images represent



Above, right, the Mardovan masking plate for Simplex projector. Left, Mardovan mask for another type projector.

Note: S/Sgt. Mardovan's devices and attachments described in his paper are protected by Patent Application No. 559006. His explanation of his proposed method is presented here because the "American Cinematographer" constantly strives to be the first to print new ideas, methods and developments in the technical field of motion pictures. Quite naturally, this magazine is not responsible for the statements or claims of authors, but gladly presents them for study and consideration by the readers.—The Editor.

Right, S. Sgt. Mardovan

reels numbers two, four, six, etc. By this means two thousand feet of picture actually appear on only one thousand feet of film; thus resulting in a saving of up to fifty percent of film stock.

A most important factor of my invention is that no mechanical changes are required in the standard equipment used either in photographing, printing or projecting. The only accessories required in photographing, printing and projecting, are masking devices or attachments with apertures approximately sixty percent that of standard 35 millimeter and one-half the size of 16 millimeter picture frames. These apertures are in direct proportion to the height and width (three to four ratio) to the standard 8, 16, 35 and 70 millimeter "Academy" sizes.

To photograph with a standard (conventional) camera, a mask is inserted into the camera aperture, which reduces the "frame" or picture to a substantially smaller size. Alternate picture frames are photographed, while the accompanying sound track (in a single system camera) is also photographed or recorded; being in proper alignment to the standard sound recording head, and remaining unchanged from standard size track. When a roll of film in the said camera reaches the last few feet, the camera is stopped and a "notch" or a similar indication is made on the film to show the position of the film in the camera aperture at that time. The exposed roll of film is then removed from the take-up magazine of the camera, and, using a dark-room or a loading-bag, is reversed (turned over with the sides of the spool in the roll of film facing in the opposite direction), re-loaded and re-threaded in the camera with the "notch" or mark moved one sprocket hole above or below its previous position. The film is then run through the camera a second time, during which the alternate picture frames, previously unexposed, will then be exposed, and the sound track will be impressed in proper alignment on the film edge opposite to that previously photographed or recorded.

With regard to laboratory procedure in printing and developing, no changes are necessary in the negative processing.

For the printing operation, the printer should be of the continuous contact type, and should be provided with masks which will permit separate printing of each sound track and sequence of pictures. No other modifications are needed for this type printer.

An especially arranged printer may also be used in my method, comprising two optical printing heads in combination with magazines, so arranged as to print two or more sound tracks and/or picture sequences, simultaneously on the same strip of 35 millimeter and/or 16 millimeter film.

For editing purposes, in cutting negative film, it will be necessary to make duplicate picture negatives of each set of 35 millimeter and/or 16 millimeter pictures.

If it is desired, the reduced picture sizes of this invention can be enlarged by optical printing to standard 35 millimeter or reduced to 16 millimeter sizes at the time duplicate picture negatives or "master" positives are made.

Negative or positive duplicate prints may be made from standard sized 35 millimeter or 16 millimeter film by optical printing to conform to the size used in my process and/or method, either in black and white or in color processing.

Sound track editing can be done from separate 35 millimeter and/or 16 millimeter sound track prints, according to current standard practices.

To project, the only accessory needed is a simple masking plate which can be readily inserted into any projector aperture retainer, and, after the first series of pictures of my process is run through the projector, all a projectionist has to do is to remove the reel from the projector take-up magazine, replace it in the feeding magazine and re-thread in the usual manner. This places the proper sound track or tracks in the standard and/or auxiliary sound aperture and/or apertures, and the second set of pictures is ready for projection, thereby, eliminating rewinding of reels. This means much saving in labor and time to the projectionist, and the elimination of rewinding also tends to lessen scratching of the film and prolongs its life; for, instead of concentrating all the wear and tear onto one side of the sprocket holes, this wear and tear is reduced by balancing the wear equally onto both sides of the sprocket holes. This, in turn, retards slipping, warping and tearing of the film. I wish to point out here, that since, in my process, alternate frames are masked-off from the light in traversing through a projector, the film is **not** exposed twice to the projector light and heat as might erroneously be assumed.

Because of the fact that the picture and the projector apertures are reduced in size in my process, the projected pic-

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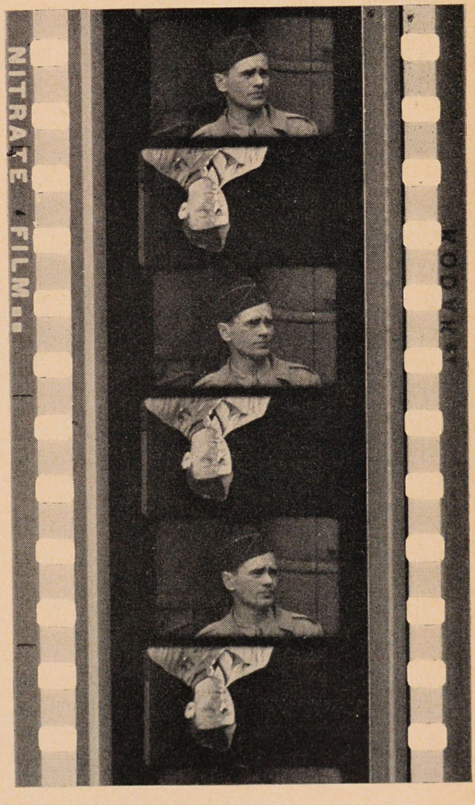
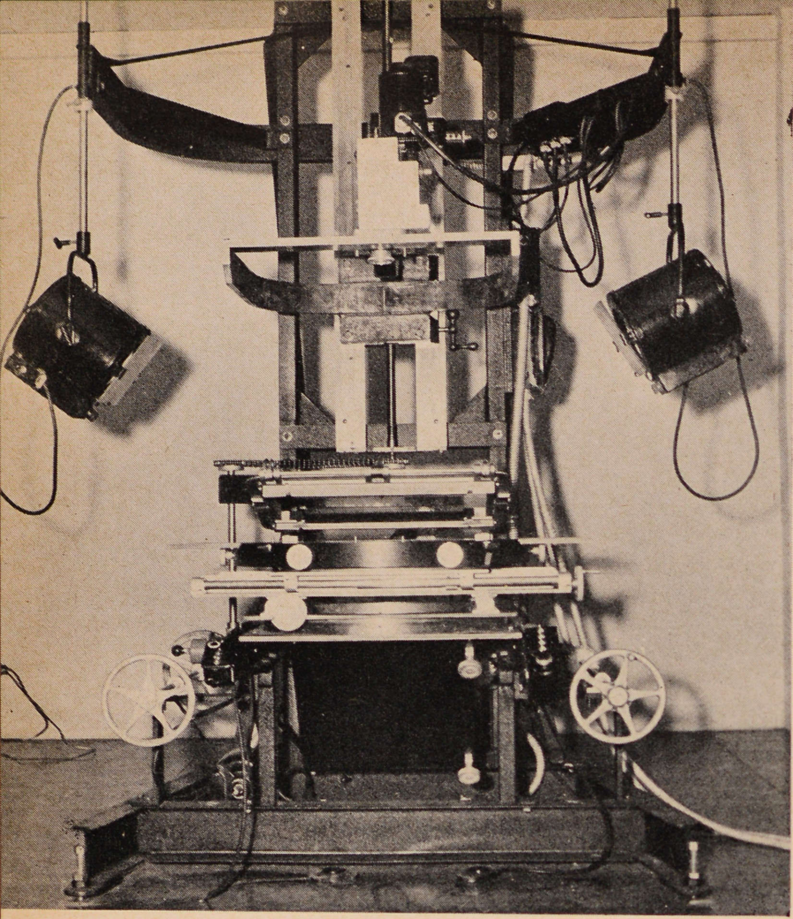
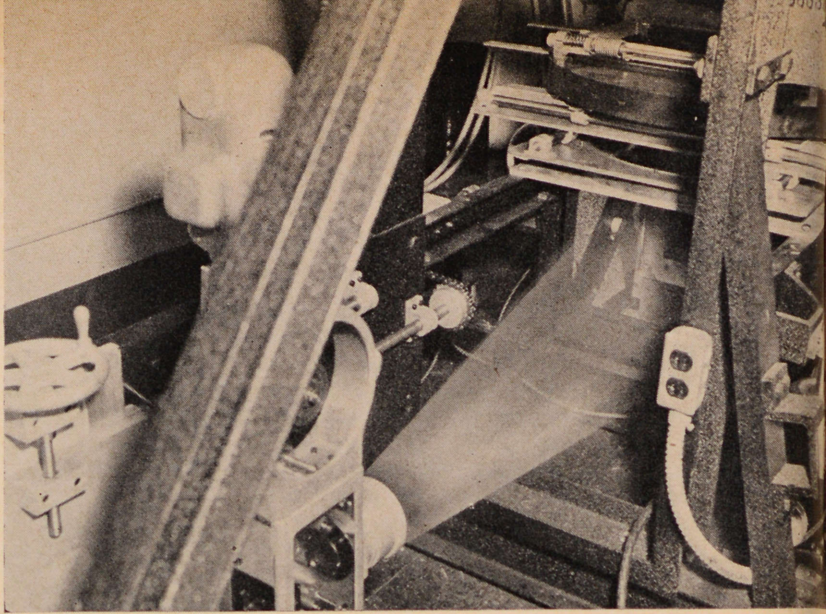


Above, another example of the Mardovan processed film, showing the picture sequences in "staggered" position for special "stereoscopic" effects.





On this page, left, front view of the Animaction unit. Above, rear view of the unit showing the projection equipment, mirror, and dual projection plate. On opposite page, top, Max Ising, Harman Productions camera chief, illustrates the ease with which the Animaction unit is loaded. Right, bottom, is top view of the Animaction unit platen area. All the controls are within easy reach of the cameraman. This platen has a 360 degree rotation. Bottom, left, Leonard M. Poole, designer and engineer of the Harman Animaction unit.

HARMAN UNVEILS NEW ANIMACTION UNIT

By W. G. C. BOSCO

BRINGING new latitude to the telling of screen stories, making it possible to combine the talents of live actors and animated characters in a single scene with startling realism, opening up brilliant new vistas in the realm of fantasy, and adding another milestone in the art and science of Motion Pictures, is the new Animaction unit recently revealed in the studios of Hugh Harman Productions, Inc.

Adaptable to either black-and-white or any color system now in use, the Animaction unit has proven after exhaustive tests to be so flexible in its use, so versatile in its application and to be capable of such high quality in all the uses for which it has been designed that it threatens to revolutionize the potentialities of motion picture production and make obsolete much that is today considered standard equipment.

Apart from the secret devices involved in a new process for making travelling mats—a process that seems to make all things possible—for which patent application has been made, it can be revealed that this Animaction unit combines live-action with live-action in an advanced form of split-screen, or the action of flesh-and-blood actors with that of animated characters, against either painted or fabricated sets. As an optical printer it is capable of a finer quality than that usually associated with the best optical printers; and in this respect produces amazing results in blowing up 16mm. to 35mm., or reducing 35mm. to 16mm. It can be truthfully said that the Harman Animaction unit is the most flexible and most technically advanced piece of equipment of its kind in practical use in the industry today. And while much that it accomplishes is possible through other means and methods, the Animaction unit, by providing an exact control of the multiple elements involved, and through the application of recent advances in optics, produces excellent results more simply.

Scenes combining live action and drawn action have a life-like realism, and appear to have the depth and focus of normal vision. This is due in part to the use of dual-plate projection which eliminates the problem of the over-head lights, needed to illuminate the animation cells on the platen, from interfering with the light from the translucent screen which carries the rear-projected picture.

In straight animation, and in animation which is combined with live-action, a whole new field, freed from mechanical restrictions, is opened up. Previously it was possible to have only a few foreground planes of sight, the rest was distorted or unreal. Now, with the Animaction unit, it is possible to combine live-action, animation, and miniature and achieve a realm more real than the actual; always supposing that it is possible to create the actual to be able to film it. The control, which is entirely automatic, is in the hands of the cameraman with more than a score of operations keyed to the console-like hand and foot switches at his direction.

The idea for such a unit originated, probably, as long ago as 1928 when Harman-Ising, the predecessor of Hugh Harman Productions, and one of the pioneers of animated pictures, produced the first subject in which live actors and animated characters acted and talked to one another; a production which, incidentally and for the record, constituted the first talking cartoon. The present unit, however, was born of the practical necessity for providing a means by which training films for the armed forces, dealing with complicated technical subjects, could be more graphically portrayed. In this important work the value of the Animaction unit has already been proven.

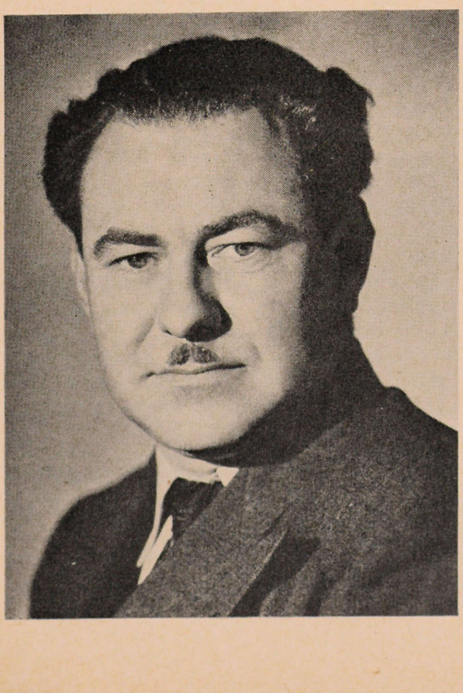
Credit for the design and development of the Animaction unit, and the engineering ability that reduced its many mechanical complexities and nuances to its present practical simplicity, belongs to Leonard Poole. Leonard entered the motion picture business as an assistant cameraman for Pathe News, in 1924, and is distinguished for having anticipated the coming of sound by building the first independent sound equipped commercial film laboratory, Associated

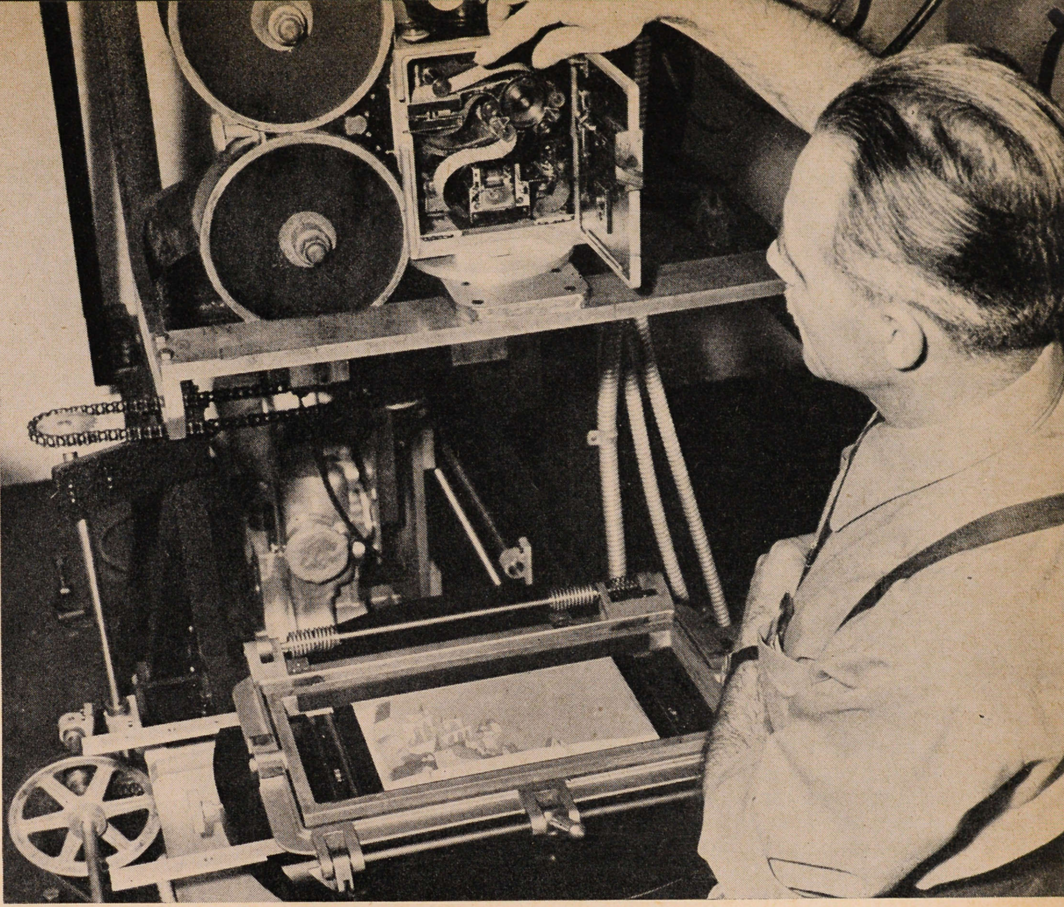
Film Enterprises, Inc., and the first independently produced single-system sound equipment. His most notable achievement, however, prior to the Animaction unit, was the designing and development, for the J. P. Seeburg Corp. of a coin-operated motion picture projector which was selective, and which synchronized the motion picture to a record by means of an inaudible signal. The commercial application of this device was interrupted by the War.

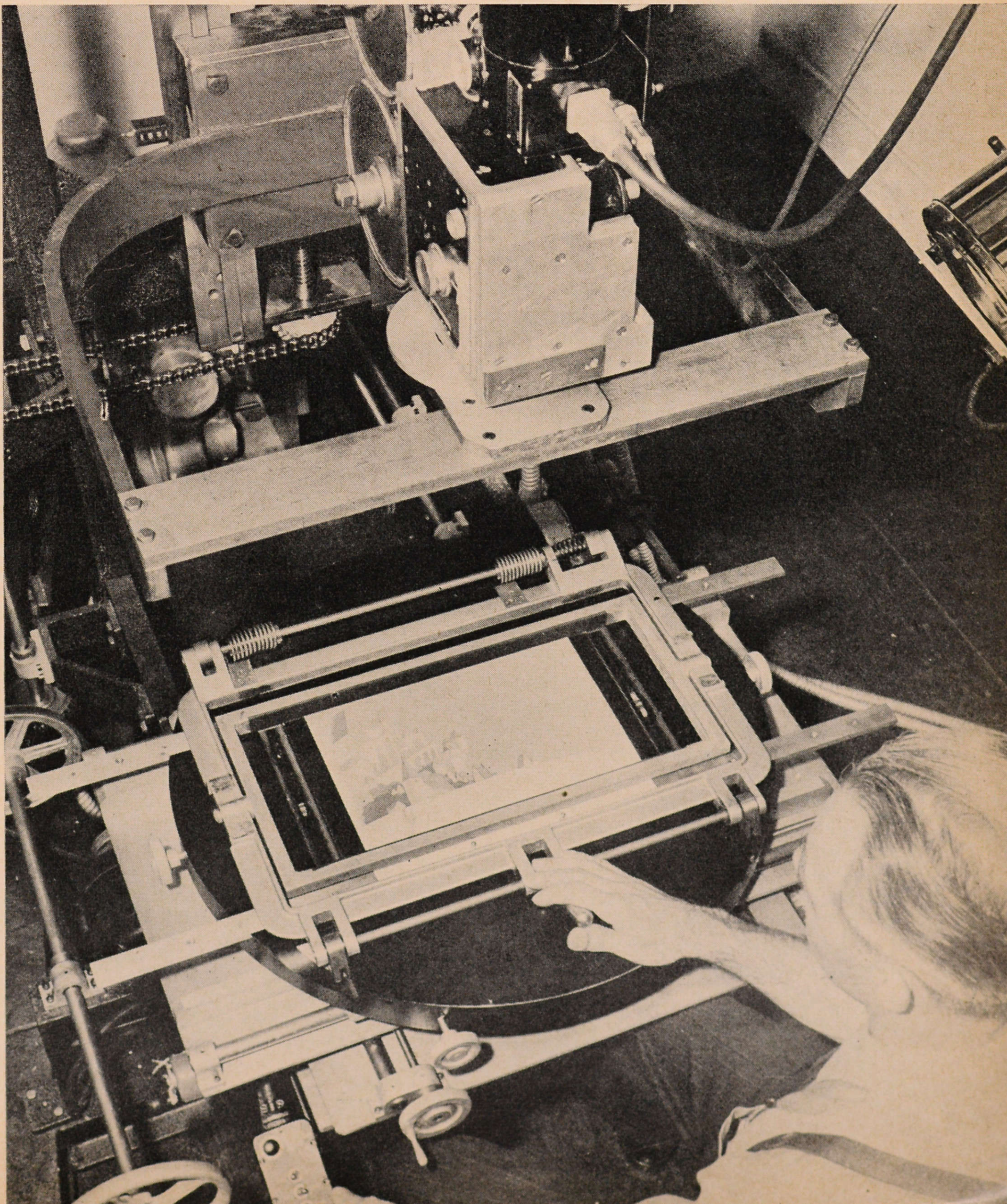
"Nothing is impossible, and no scene is to complicated for the Animaction unit," Hugh Harman pointed out. That this needs to be true can be realized from a reading of the scripts scheduled for production as Harman prepares to switch over from the Government films that have engaged his company's entire attention for the last four years, to an entertainment program relying heavily on the Animaction technique. A brief resume of two of the stories will give some indication of the use to which the Animaction unit will be put.

"Hollywood Story" is a rollicking, remantic thing which will introduce a sophisticated cartoon cat who has quit starring in cartoons because he sees no future in the business, and becomes instead business partner to a real live plumber, and a talent agent on the side. In the complications that follow the audience will be treated to as weird and as zany an assortment of antics as ever appeared on the screen, as real, live people walk on ceilings, run around dressed in a bath-tub, and behave generally in a manner usually reserved for cartoon characters.

"King Arthur" is a totally different venture. Into this story is woven all the grandeur and charm inherent in these legends that have lived for a thousand years. Here is fantasy such as has never been seen on the screen; story-book castles, and fire breathing dragons; the magic of Merlin, and the evil sorceries of Morgana; the antics of knights, and harpies, and bewitched fawns against the tapestry of medieval England.







Kine-Micrography in Biological Research

By R. McV. WESTON, M.A., F.R.M.S., F.R.P.S.

WHILE ordinary kinematography is frequently used in biological research, the combination of the kinematograph camera is much less frequently employed.

This is unfortunate, as kinematography offers the biologist a valuable method of control over the time-factor affecting the problems in which he is interested. The names of Canti, Comandon and Loveland are doubtless familiar, and I believe Marey used this technique in some of his work, carried out many years ago.

The engineer frequently uses the high-speed kinematograph camera in order to analyze the rapid motions of the machines in which he is interested, and the biologist can, if he wishes, use time-lapse kine-micropgraphy to synthesize the slow movements taking place in growth. The technique is particularly valuable to the cytologist, and in the study of the growth and movement of living cells in vitro.

Diminution of Time Factor

Many types of living cells can be seen to show movement and change, by the use of the microscope and visual observation only, but the process is usually so slow that much time is expended in studying them and the work is very tiring.

Visual observation frequently fails to show what is actually happening, because the mind finds it very difficult, and often impossible, to sum up or synthesize movements of small magnitude spread over a long period of time. It is very much like looking at a length of kinematograph film. The individual pictures can be seen easily enough, but the impression of movement is absent.

Kine-micrography, on the other hand, may show certain movements to be rhythmic in character when visual observation reveals only slight differences in size or shape over, say, half an hour or an hour.

Another valuable feature is that two sequences, taken under the same conditions, may show differences in rate of change which are otherwise very difficult to detect.

A further important point is that any movement is more clearly seen under the microscope with the high powers. The movement is magnified as well as the object. If, in order to cover a wide field, a medium or low magnification has to be used for visual observation, movement may be quite impossible to detect. Using kine-micrography, however, it is just as easy to record movement under low powers as with high powers.

Time-Lapse Apparatus

The control over the time-factor has to be carefully considered in work of this nature, as different taking speeds have to be employed with different magnifications so that the movement, on projection, is neither too slow nor too fast.

One of the great advantages of time-lapse kine-micrography is that the apparatus can be made completely automatic in operation so that records can be obtained of changes occurring over periods of many hours, without any attention. One has to do some of this work to experience the great satisfaction of leaving the apparatus working all night and in the morning finding the film half made.

Since work of this nature is rather specialized, commercial equipment is not available, and the apparatus will have to be made up. This is by no means difficult, and perhaps some description of the author's equipment will be of interest.

The microscope is used in the vertical position as this is usually most convenient when living preparations are employed. The microscope is supported on an anti-vibration mounting consisting of a steel plate measuring 18 inches x 13 inches x 2 inches. This weighs about 100 pounds, and is supported on soft rubber at the four corners.

The camera is a 16mm. Cine-Kodak Special, but if expense is no consideration, a good 35mm. camera is to be preferred for optical reasons.

The camera is supported above the microscope by means of a 4-inch Drummond lathe-bed, mounted vertically, and also standing on rubber. The handwheels of the lathe then control the position of the camera, in three dimensions, with great precision. No part of the microscope, or its mounting, must be allowed to touch the camera or its mounting.

Thermostatic and Optical Equipment

The microscope is housed in an incubator, to keep it, and the preparation, at the correct temperature. While a water-jacketed incubator is best, this is not essential. The author's incubator is made out of thick card lined with sheets of compressed cork. It has proved quite satisfactory in use. Constant temperature is maintained by means of carbon filament lamps with blackened bulbs, which are regulated by a thermostat and a vacuum switch.

It is essential to have a watching eyepiece between the microscope and the camera so that progress can be observed from time to time and correct focus maintained.

One of the most important points is accuracy of focus on the film, and it is the author's experience that any method of focusing depending on the use of ground glass is quite useless. The fine detail within the image will then be entirely lost. The only satisfactory method is to observe the aerial image projected by the microscope with a suitable magnifier.

The illuminating system is quite straightforward, but a timing mechanism and sector shutter are provided to make exposures at the appropriate intervals and to shield the preparation from light during the intervals between exposures. This unit was made with Meccano parts and is driven by a small synchronous clock motor. The timing mechanism actuates the camera by means of the standard electrical release, and at the same time indicates the number of exposures made on an electric counter.

Need for Filters

Attention should be given to the provision of suitable filters, not to modify contrast as in ordinary photomicrography, but to protect the specimen from harmful radiations. Canti used a Pointolite as his illuminant, and took precautions to suppress all infra-red radiation. Since the Pointolite is, in effect, both an arc and an incandescent source, the presence of ultra-violet radiation has to be borne in mind. This is usually overlooked, but if a spectrogram is made, it will be found that the radiation emitted goes as far down as 3,150A, and such rays are likely to be more harmful than the infra-red. Radiation of this wavelength will easily penetrate the glass components of the illuminating system and reach the preparation. To prevent this, a Wratten No. 2A or a Leitz U.V. filter should always be used. The intensity of the illumination is brought to the proper level for correct exposure by the use of neutral density filters.

NOTE: The above article by Mr. Weston is reprinted here through the courtesy of the Journal of the British Kinematograph Society.—The Editor.

Ten Top B.I.S. Films Announced

The British Information Services have found their ten most popular 16mm. films to be:

Desert Victory
D Day
Cherbourg
Pilot Is Safe
Road to Paris
Target for Tonight
Psychiatry in Action
World of Plenty
Before the Raid
Britain's Paratroops

Two on this list of the first ten most popular films were made for and shown almost exclusively to specialized groups. **Psychiatry in Action** was booked over 2,000 times, largely by audiences interested in the rehabilitation of returned soldiers, while **World of Plenty**, dealing with post-war food problems, is of interest to agriculturists and nutrition experts. **D-Day, Cherbourg** and **Road to Paris** are three of a series called "Act and Fact" which uses combat footage to record the war on the Western Front.

THE TELEVISION CAMERA

By RICHARD HUBBELL

LIKE the human eye but unlike the motion-picture camera, the television eye is always "seeing" whenever any light reaches it. The motion-picture camera "sees" only when it has a strip of film in it, but the photosensitive plate in the television camera generates a *signal* constantly. (Whether or not that signal is "seen" depends on whether the camera is turned on, and whether the control apparatus is amplifying the signal and reproducing it on a screen.) The camera is so sensitive to light that, when it is not in use, a cap is placed over the lens to exclude all light and thus prolong its useful life. Excessive light can "burn" a spot on the mosaic of the tube, ruining it for broadcast usage.

Cameras in commercial use (1936-45) were manufactured under RCA or Farnsworth patents, with the RCA types more widely used for studio and outdoor pickups. Most cameras of prewar vintage are built around RCA Iconoscopes, and a few around RCA Orthiconoscopes, popularly called Orthicons. The Farnsworth type of camera tube is known as the Image Dissector and has been used largely for picking up motion-picture film telecasts.

Intense illumination is required to produce a good picture with prewar Iconoscopes and Image Dissectors. In general a greater amount of light is needed with prewar models of these tubes than in black and white motion-picture production, a minimum over-all lighting level of 350 to 500 foot-candles being desirable on all parts of a given scene. High-lighting and modeling lights are added to this.

If sufficient light is not reflected from all parts of the scene viewed by the camera, the photosensitive mosaic is not sufficiently activated by the underlit portions. The result is an "undermodulated" picture which does not transmit well, or a picture in which the edges suffer from "edge flare."

In 1939, RCA began to introduce a few models of its improved type of camera, the Orthicon, which was four to five times more sensitive to light than the Iconoscope, although not capable of transmitting as sharp a picture as the Iconoscope because of lower powers of contrast and resolution. During the war, improvements in design made possible an Orthicon with higher resolution and a further increase of sensitivity, about another 400 to 500 per cent.

Both the Image Dissector and the Orthicon are free from a peculiarity of the Iconoscope: the need for "shading" of the picture by an extra engineer. In order to control a technical quirk of the Iconoscope, a special video engineer must constantly be fiddling with knobs and dials to keep the picture correctly shaded. The visible effect is the lighting of an overly dark portion of the screen.

The high level of illumination needed for prewar television cameras caused extreme discomfort for actors and studio personnel, particularly in small, ill-ventilated studios equipped entirely with hot, incandescent lights. Air conditioning helped considerably but did not solve the problem, which was to produce either more sensitive cameras or "cold light." There are two types of "cold light"—*mercury vapor*, and *fluorescent*—both of which offer much promise for the future.

A camera takes pictures because light waves enter it and effect a photosensitive surface. The human eye works in the same way and so does the television camera. Since the photosensitive surface in any camera or eye has a fairly uniform and constant degree of sensitivity to light, and since most sources of light can vary considerably from bright to dark, some device is needed to regulate the amount of light entering the camera or eye.

In the human eye the device is automatic. Look closely in the mirror at your eyes, noting the size of the black spot in the center. Suddenly increase the amount of light shining on your eyes, and notice how the spot becomes smaller. Since the intensity of the light has increased, more light will enter your eye and "overload" it unless the flow of light is decreased. The black "spot" in your eye does just that. It is called the pupil and it is the opening through which the light waves enter. It is automatically closed down when the light increases. Turn off the light and it will again become bigger in order to admit more light so that you can see.

In a television camera, as in most photographic cameras, there is a similar device, usually called the *diaphragm*. Instead of being automatic it is adjusted by hand. If the lighting on a scene is weak, its *stop-opening* is opened wide. If the lighting is very strong the stop-opening is closed down.

Just as in measuring weight, or distance, or time, we have standard measures—pounds, yards, and minutes—so some sort of universal measuring term is needed to provide a guage of the amount of light used in cameras. Such a system has been worked out by photographers and lens manufacturers all over the world. The diaphragm of every lens has a control lever or ring which is calibrated with this standard measuring unit—called *stop numbers*. These numbers always mean the same thing, no matter how big or small a lens may be. A tiny, 8 mm. motion-picture camera with its lens adjusted for stop number 11, and a television camera with a lens ten times as big and set at stop number 11, get the same *relative* amount of light. The numbers mean the same thing on all lenses, regardless of their size.

These stop numbers are also known as "f" numbers, because the letter "f" is generally used to identify them—just as the $ sign is used to indicate dollars and the % sign is used to indicate per cent.

Lenses are usually so calibrated that each division indicates approximately an increase of 100 per cent in the amount of light which can pass through the opening. The largest "f" number indicates the smallest possible opening of the diaphragm, while the smallest "f" number indicates the largest possible diaphragm opening. (For example, the "f" numbers of a television camera lens might run f/2.8, f/4, f/5.6, f/11, f/16, with the latter the smallest opening of the lens. No settings smaller than f/8 could be used on the prewar type of cameras because of their low sensitivity.) As the lens is opened up from f/16 to f/11, it will admit twice as much light, and so on up the scale. Each division admits twice as much light as the one ahead of it, with f/2.8 admitting 32 times as much light as f/16, and so on.

Of course "f" numbers other than the ones just listed are also used. Some lenses may open up to f/2.7—just a bit wider than f/2.8. Or a "fast" lens might open up to f/1.9, which passes 100 per cent more light than f/2.8, while a very fast lens might go to f/1.5, which is considered about half a stop number better than f/1.9—and would therefore pass about 50 per cent more light than f/1.9.

In general, lenses are identified by their largest opening, which is called a lens' *speed*. A very fast lens, such as an f/1.9 or an f/1.5, is a more expensive lens than a slow f/4—assuming both lenses are the same size. A fast lens can take a picture of a scene with less illumination than a slow lens because a fast lens can be opened up much wider.

The correct stop number (lens opening) for most studio television programs can usually be determined by the cameraman on the basis of previous operations in that studio, but when any radical lighting changes are made, or when the cameraman is working in unfamiliar surroundings, he will usually check his lighting with an exposure meter. The standard type of exposure meter uses a photoelectric cell and gives a cameraman an instantaneous and accurate reading of the intensity of light on any given object. From this reading he can immediately determine the largest and smallest openings of the diaphragm which can be used for that scene with each lens of each camera.

Different types of lenses are used for different purposes with any type of cam-

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Note: The above article is a chapter of "Television Programming and Production," a new book by Richard Hubbell, which is soon to come from the press of Murray Hill Books. Mr. Hubbell is noted for his book, "4000 Years of Television," and has graciously permitted the American Cinematographer to present this preview of an interesting chapter to its readers.—The Editor.

Movement In Movies

By EZRA GOODMAN

SLAVKO VORKAPICH is a rather exotic name and the word "montage" seems to be on the esoteric side. But Vorkapich, the former M-G-M montage expert, who has recently been directing some of the best of the "This Is America" series for RKO, is an outspoken man who talks good common sense about motion pictures. He has now returned to Hollywood after a stint in the East, and it is likely that before long he will have a chance to put some of his theories into practice for a major studio.

Montage, in Hollywood, has a special meaning. When Vorkapich was working for M-G-M, he devised montages for numerous pictures, mainly to get across a point economically or to bridge a time lapse. In a matter of moments, with images cascading across the screen, he was able to show Jeanette MacDonald's rise to fame as an opera star in "Maytime," the beginning of the revolution in "Viva Villa," the famine and exodus of "The Good Earth" or the plague sequence of "Romeo and Juliet."

But the theory behind montage, according to Vorkapich, has wider applications and can be used to tell an entire screen story, not just an isolated moment in it. This theory is the rather familiar one that movies should move, that motion pictures are a visual medium, and that the camera is the means with which the screen creator expresses himself. Although this theory has been set forth frequently, it has too rarely been put into effect. Most movies today, Vorkapich contends, are merely extensions of stage technique. They are based on a theatrical use of dialogue, and the camera, through no fault of the cameraman, records the action passively instead of participating actively in the proceedings.

These are generalizations composed of fairly big words. To get down to concrete cases, Vorkapich avers that motion pictures were initially devised to record movement—whether of horses, trains or custard-pie wielders—and that the word "movie" is indicative of the nature of the medium. Vorkapich's theory is that movement arouses an involuntary visceral reaction in the spectator, and that different movements can evoke different types of responses. An upward movement, for instance, usually represents aspiration or exaltation. A descending movement is symbolic of heaviness or danger. A circular, revolving movement is emblematic of a cheerful mood. A pendulum movement conveys monotony and relentlessness. And a diagonal, dynamic movement stands for the overcoming of obstacles.

These are physiological facts promulgated by the behaviorist school of philosophy. Since becoming a part of the picture industry in 1928, Vorkapich has experimented with these various ideas and has found them to be true. He wants to make it clear that he does not believe in motion for its own sake: too many directors today use dolly and boom shots simply to have so-called movement in a movie. Vorkapich says that there must be a reason for each movement, arising out of the subject matter. In the pioneer days of the screen, slapstick comedies and Westerns made use of a crude form of this technique. Vorkapich wants to see it applied to more complex ends in order to convey subtleties of mood, reaction and motivation.

In 1934, Vorkapich did two montages for Hecht and MacArthur's "Crime Without Passion" at the Astoria studios in New York. He cites one of these, dealing with the symbolic unleasing of the Furies, as a sort of master manual of visual screen technique. This sequence, in its original form, ran to only 300 feet of film, but it encompassed most of the things that can be done with a camera and film.

The sequence opened with Claude Rains shooting Margo. The initial shot was a full-screen closeup of one of Margo's eyes as she stared into the gun. Vorkapich shot this closeup as a still picture in order to have the reverse of movement with the resultant feeling of holding one's breath. Vorkapich points out that the absence of movement can be as important to an artist as movement itself: all life is composed to contrasts. From this static closeup, he dissolved to a closeup of the muzzle of the gun in an exact overlap that found the gun in the same place on the screen as the eye had been. He cut back to the eye, this time showing a slight twitch. The next shot was again of the barrel of the gun. The shot of the gun was expressed visually by a number of quick flashes, an all-black frame alternating with a white one. Each of these shots was held on the screen for only two frames. In this way, the rapid, volatile effect required was attained visually.

Vorkapich adds that the sound of the gun shooting was on the sound track, but that the result was all the more powerful for being a welding of the visual and aural. He observes that the creative use of sound is important to a motion picture. Sound on the contemparary screen consists mostly of dialogue or obvious sound effects. I remember a picture Alfred Hitchcock made in England in 1937, called "The Woman Alone." In one scene Sylvia Sidney is shown about to murder her husband, Oscar Homolka, with a kitchen knife. There is a deathly silence on the screen as Miss Sidney picks up the knife, almost without realizing it. Then, as she sees that she is holding the knife, she lets it fall back on the plate where it makes a disproportionately loud noise. In this case, Hitchcock manipulated sound just as he did the camera with excellent results.

To continue with the montage from "Crime Without Passion": the next shot was of Margo's eyes wincing in sudden pain. The next shot was an out-of-focus shot of smoke leaving the gun and the man behind the gun. Vorkapich explains that in an out-of-focus shot, the spectator's eye strains to bring the picture into focus and that this effort physically almost forces tears into the observer's eyes. Then there is a slow-motion shot of the woman falling to the ground in order to prolong the feeling of agony. One of the things the screen can do is to stretch time or compress it for dramatic purposes. The march of the police down the Odessa steps in the Russian film "Potemkin" took perhaps ten minutes to run on the screen. Actually, such a march would have taken only a few minutes in real life. Director Sergi Eisenstein prolonged the scene purposely in order to wring the last drop of suspense out of it.

Before Margo was shown hitting the ground in "Crime Without Passion," Vorkapich cut to a closeup of a drop of blood hitting the ground. Then out of the blood of the victim, the symbolic Furies were shown rising and flying over the city. Vorkapich shot this scene with the Furies stationary and the camera shooting from above and passing them as it headed down. Since all space is relative on the screen, the Furies seemed to be in motion. When I was at the Astoria studios where "Crime Without Passion" was shot, I remember looking at some of the sets stored away in one corner of the studio. The sets were flimsy and incomplete. Hecht and MacArthur, and Lee Garmes, the cameraman, had no use for expensive, cumbersome sets. They knew just what effects they wanted to obtain and they were able to get those effects easily and inexpensively by using their ingenuity.

I cite this montage from "Crime Without Passion" not because it is necessarily flawless, but because it represents an approach to movie-making that has been either forgotten or relegated to the background in recent years. Most of the shots I have quoted are quite obvious ones, and the point I am making is almost a truism. This point has been made many times before. I am making it once more because no one seems to pay any attention to what appears to be the obvious thing. The screen, as an artistic medium, has certain inherent characteristics. It can do things that other artistic mediums can not. But these advantages of the screen are rarely utilized today. It is

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The Television Camera . . .

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era, television or photographic. The "normal" lens, the basic lens, is the one which gives the camera—and hence the viewer of the picture—the same perspective and view he would get with his own eyes.

Suppose you are watching a horse race, and you can see everything quite well with your own eyes—race track, crowds of people, sky and clouds, and the horses coming down the track. Now you want to see the horses more clearly, so you raise a pair of field glasses to your eyes—or perhaps it is a small telescope—and then you can see the horses clearly. They appear much larger to your eyes, but you no longer see the crowds of people and the sky. You have focused on one part of the view and magnified it for better seeing while excluding the rest of the scene.

If you are using a camera on the same race, you would be putting a special lens on the camera, which then would magnify the part of the scene you wish to photograph more clearly. This lens will be longer than the ordinary lens on your camera. It probably will stick out several inches in front. In addition to magnifying the view of the horses, it will exclude the rest of the over-all scene, just as the field glasses or telescope did when you peered through it. It has the effect of making the horses seem much closer than they were with the original, "normal" lens.

The value of having various types of interchangeable lenses is that they increase the flexibility of your camera. Without having your camera at all you can get a variety of different shots of the same scene, ranging from infinitely long shots to extreme close-ups. The same variety can also be achieved by moving the camera back and forth, but sometimes this is not practical or convenient—as at a horse race. On many occasions in studio programs it is desirable to get an extreme close-up without having to move your camera up to within a foot or so of the subject—thus distracting the actors, getting in the way of other cameras, and getting between the lights and the subject, thereby casting a shadow upon it.

The use of a close-up lens gives a form of distortion to the picture, since it shows the image with a spatial relationship different from that which the unaided eye would perceive. Distortion by close-up lenses, desirable because it can be accurately controlled, is not the only type of optical distortion available to the television producer. It can be carried in the other direction by using a lens which, instead of decreasing the sense of distance by magnifying the image, increases the sense of distance—the effect obtained when one looks through the wrong end of a pair of opera glasses. This type of lens, known as a very short, wide-angle lens, exaggerates perspective. It can make an ordinary room seem like a long hall. If a person standing before the camera raises his hand toward the lens, it can be distorted into a huge fist, bigger than anything else in the picture. Some early television stations with very small studios have experimented with this type of lens—to make their tiny studios seem larger.

In general, the more a lens magnifies a scene, the greater it is in length. For this reason lenses are designated by their *focal length*—as well as by their speed. Thus we might describe a television lens as having a focal length of six inches and a speed of f/2.8. Immediately a cameraman will know what sort of view the lens will give and the minimum amount of light which can be used.

The normal lens—comparable to the human eye—varies with the size of the camera. An 8 mm. motion-picture camera has a normal lens of one-inch focal length; a 16 mm. camera uses a one-and-a-half-inch length, and a 35 mm. takes approximately a two-inch lens. Note that in each case the increase in the length of the lens is comparable to the increase of the *area* of photosensitive surface of the film; 16 mm. film is twice as wide as 8 mm., and therefore the area of each frame is four times larger. To focus the larger picture needed to cover this greater frame area a 50 per cent longer lens is required. The bigger the photosensitive surface upon which the image must be focused, the longer and bigger the lens must be. For example, in prewar Iconoscopes, the photosensitive mosaic is quite large, something like 3 by 4 inches. The normal lens used with this camera has a focal length of six or six and a half inches—which would be a powerful, telephoto length on a small motion-picture camera.

If the basic, normal lens on this type of Iconoscope is six inches in focal length, then the magnifying close-up lenses are correspondingly larger—nine, twelve, and eighteen inches. Any lens less than six inches would exaggerate distance, by extra wide-angle. A twelve-inch lens would include a picture area *half* of that covered by the six-inch lens, but this area would fill the screen and thus be magnified *two times.* An eighteen-inch lens would include only *one-third* of the picture area of the six-inch lens, and would thus magnify the subject *three times.* A thirty-six inch telescope lens, which might be used at a football game, would magnify the subject *six times.*

Needless to say, lenses as big as this are clumsy to handle and very expensive—particularly if they are "fast," and prewar television cameras had to have "fast" lenses. (Telephoto lenses are usually not as fast as those of shorter lengths, because it is difficult and costly to make a lens which has both high power of magnification and great speed.) The trend in postwar cameras is toward smaller size, photosensitive surfaces placed close to the lens, which will make possible the use of smaller lenses.

The importance of *focus* is so elemental that it needs little elaboration. If the television camera is not kept in focus, the scene is not clear—if it is seen at all. That much is simple, but how to keep the picture in sharp focus is another matter. Each shot cannot be carefully measured off and triple-checked as in motion pictures. The cameras of television are constantly moving and must be in focus all the time. The cameraman must be continually adjusting his focusing mechanism if the picture is to be sharp and clean, and for this reason his view finder—through which he sees what the camera is picking up—must be connected with the focusing device. If the camera is out of focus, so is the view finder, and he sees the error and corrects it immediately.

Fundamental to the problem of getting a good focusing view finder is the problem of *depth of focus*, a thorn in the side of prewar television directors, which went hand in hand with the low sensitivity of cameras. Depth of focus means simply that portion of the area in front of the camera in which objects will appear in sharp, clear focus, without adjustment of the camera. It extends from the closest point to the camera at which an object will be in focus to the farthest point. The distance *between* these two points is the *focal* depth of a scene. In most television studios it has been pitifully small.

Depth of focus is determined by three things in practical television production:

(1) The size *of the stop-opening* of the diaphragm. The wider the opening, the shallower the focal depth. Prewar cameras, being very insensitive, needed plenty of light on the scene, but that illumination could be raised only to a given point—beyond which it became too hot to be endured by actors and studio crew. Therefore in many prewar cameras it was necessary to open the diaphragm to a low "f" number, such as f/2.8 or even lower. This resulted in such a shallow depth of focus that production of satisfactory programs was severely limited, as was the case at the Du Mont studio in New York. At the CBS studio, where most of the lighting was "cold"—mercury vapor and fluorescent—and it was possible to use more light on the set without discomfort to the actors, lenses could be stopped down to f/4.5 and sometimes to f/5.6, which helped considerably.

This problem will be eased by the introduction of more sensitive cameras which can operate at much smaller stop-openings and thus give a reasonable focal depth.

(Continued on Page 206)

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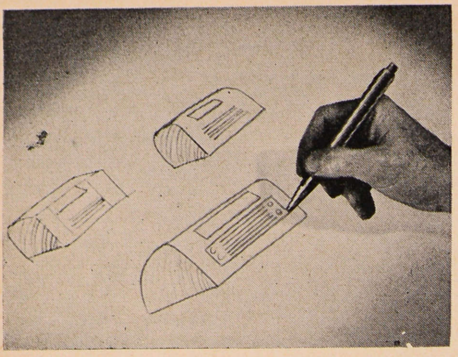
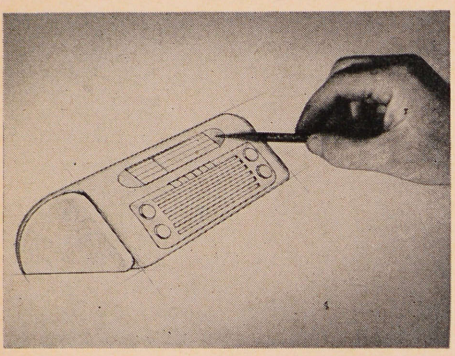
Industrial Film Review

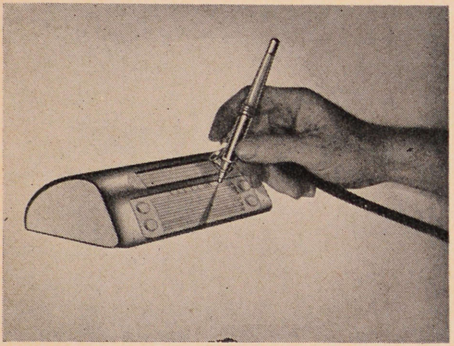
By ED PYLE



A few thumbnail sketches starts the design.



Further refinement is accomplished with the pencil.



And then the airbrush is brought into play.

Title: "Industrial Design."

Producer: Frank Knaus, 2113 North Parkside, Los Angeles.

Type: Educational. (Designing a radio cabinet from first rough idea sketches to the finished air-brush drawing.)

Length: 400 feet (11 minutes) 16mm. silent Kodachrome, titled, with accompanying typed commetary suitable for preparation of sound track).

Availability: Address inquiry to producer.

This film is the first subject of a series of educational films on commercial and industrial arts, intended for distribution to high schools, colleges and vocational schools.

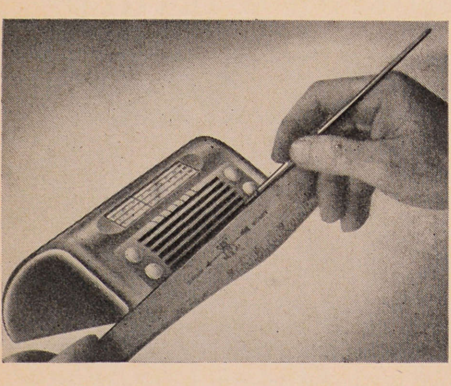
It gives the observer an over-all understanding of how a radio cabinet is designed, from the first rough pencil sketch to the finished air-brush drawing. The use of Kodachrome greatly supplements the presentation, as all the subtle shadings of skillful air-brushing in color would have been lost on black-and-white film.

Excellent hand-lettered introductory and end titles, with type set sub-titles help to tell the story, and the well written typed commetary accompanying the film could be recorded to convert this fine one-reel subject into sound.

The film consists almost entirely of close-ups showing only the hands of the designer manipulating his pencils, brushes and air-brush. Camera angles and framing are well handled, with most scenes photographed from over the designer's shoulder. A few scenes were filmed from the opposite side of the drawing board, resulting in the subject appearing upside down. This is somewhat of a distraction. To enable a change of angle occasionally to avoid monotonous scene sequence, left or right over the shoulder views would be preferable to the upside down effect. Also, a medium shot now and then, showing more of the designer would add a little interest to the continuity.

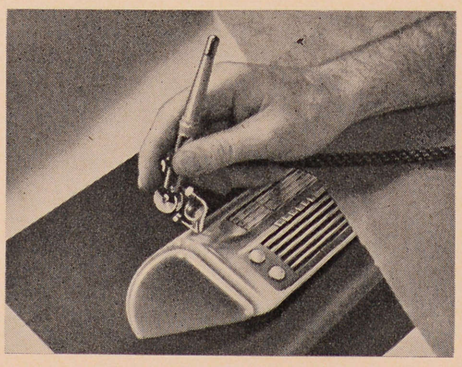
The producer, however, should be congratulated on this first reel of an interesting and useful series.

Note to Industrial and Educational film makers: Reviewing industrial and educational films is a service this magazine gladly offers free. We shall be glad to have Mr. Pyle review your films, if you send them in with all the necessary production data. If sufficiently interesting, photographs or blowups from the film are sent with your film, we shall be glad to use them in connection with the review.—The Editor.

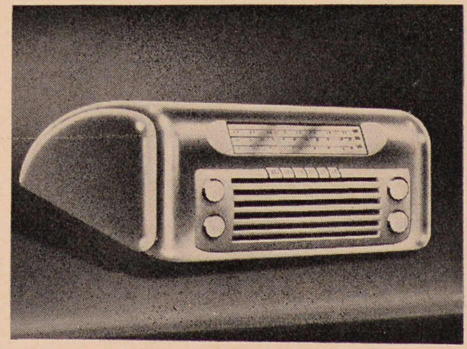


Details are added with a hand brush.

With the airbrush a few highlights are applied to add sparkle.



And here is the finished radio design. These are some of the details shown in the film.



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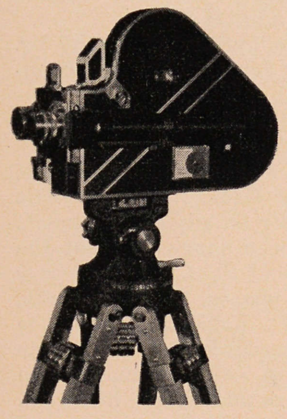

E. K. Cine Special on
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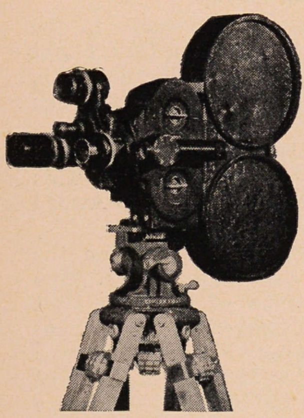
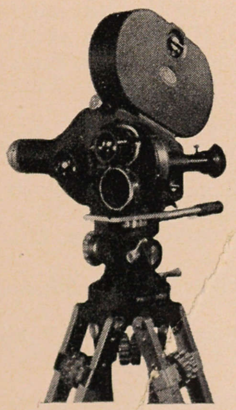
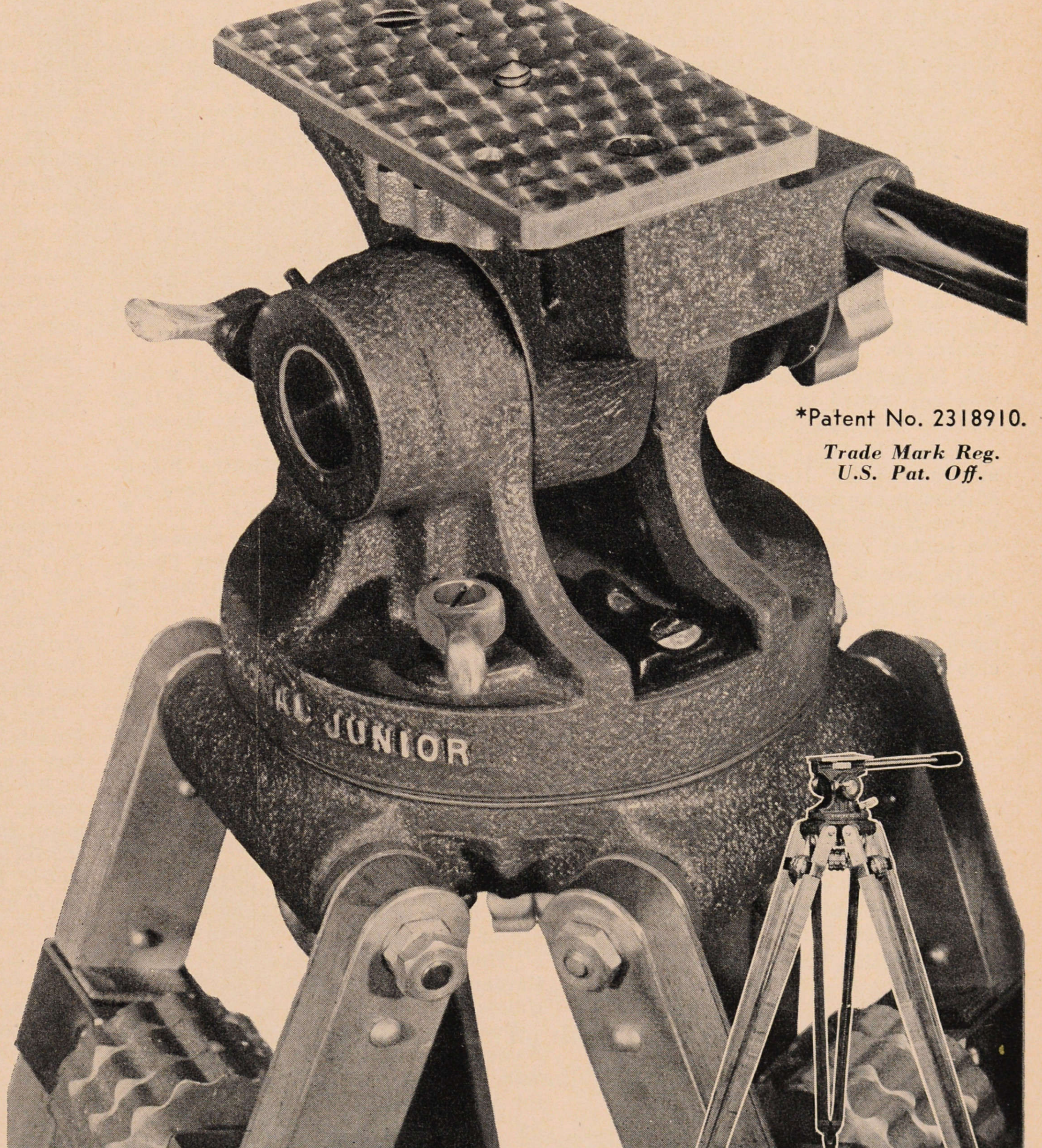


B & H Turret Eyemo on
Professional Junior Tripod



Cineflex 35mm Camera on
Professional Junior Tripod



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AMONG THE MOVIE CLUBS

Westwood Club

Plans are already under way for the annual contest of the Westwood Movie Club of San Francisco, which will be held on November 30. The following members of the Picture Review and Contest Committee have been announced: Chairman Jesse W. Richardson, Henry Biggio, I. C. Gobar and Ed Franke.

Rules governing the contest are:

1. Any subject photographed in black-and-white or color may be submitted.
2. No minimum or maximum requirements as to length of film.
3. Commercial titles will not be accepted.
4. All entries must be in the hands of the contest committee on or before November 15.
5. No entry will be accepted that has won any award in any previous Westwood Movie Club Contest.
6. Any leader or trailer indicating any award by Home Movies, Movie Makers or any similar organization must be cut from entry before submission to the contest committee.

The contest will be judged by three judges who will not be contestants, and who will be appointed by the contest committee, with the approval of the club president.

L. A. 8mm. Club

Much technical discussion and very little film featured the May meeting of the Los Angeles 8mm. Club, held at the Bell & Howell Auditorium on May 8. Program consisted of:

"A Thumb-nail Sketch of Each Past President," by Larry Zeman.

"Composition," an interesting talk by Al Leitch.

"Continuity," also interesting talk, by Bill Wade.

"Use Filters," told by Claude Cadarette.

"Sound on 8mm. Film," explained by Fred Evans.

"Transitions," how to make them, explained by Milt Armstrong.

"Technical Discussion," supervised by John Walter.

"Red Cloud Lives Again," International first prize winner in competition with 8mm. and 16mm., screened by Dr. Bob Loscher.

Syracuse Club

The month of May was a busy one for the members of the Syracuse Movie Makers. The members devoted five nights to the work of shooting, processing and editing the new club film which is being made in an elaborate manner.

Utah Cine Arts Club

Technical highlight of the May meeting of the Utah Cine Arts Club was a demonstration by Al Londema of the use of positive film in making titles. He was assisted by Cloyd Herridge. They filmed titles and developed them right before the audience, and then hung them up to dry.

Next followed the screening of the very interesting film, "Highlights of 1944" by Al Londema, which was an excellent 8mm. record of Al and his family's activities.

Second film shown was "Shots of Yosemite and Carmel," by T. R. Pope. It was presented with complete recorded commentary, background music and sound effects, and was very professional in all respects.

Next was "Back to the Soil," a film that was among the "Ten Best" in 1942. It was photographed by George Mesaros.

The "surprise" picture of the evening was a technical film from the Filmosound Library, "How Pictures Move and Talk."

At the conclusion of the screenings the title strips that had been photographed at the start of the meeting were projected.

San Francisco Club

Four films and a talk on "Exposure for Kodachrome" made up the program for the May meeting of the Cinema Club of San Francisco. The exposure talk was given by Dave Redfield. The films shown were:

"Vanities of 1945," by Adaline Meinert, a film of the roller skating Vanities.

"Billy," a particularly interesting film made by Club President Charles D. Hudson of his young son.

"The Devil's Garden" and "Mission Gardens," both photographed by Leon Gagne.

Due to unusually wet conditions at the Stone Dam Picnic Grounds, the proposed field trip of the club has been postponed for a month or more.

Brooklyn Club

Three 8mm. films in Kodachrome featured the May 2 meeting of the Brooklyn Amateur Cine Club, with an unusual 16mm. slow motion film as the concluding number. Pictures shown were:

"The Heavens Declare the Glory of God," by G. Lutz.

"The Boss Comes to Dinner," by Ryne Zimmermann.

"Land of My Dreams," by J. J. Harley.

"Slow Motion Studies," from the Bell Laboratory, by J. J. Harley. This picture was filmed at 4000 pictures per second.

"Hail British Columbia," by Leo Heffernan, was the feature of the May 16 meeting.

Saint Louis

Two unusual pictures featured the May meeting of the Amateur Motion Picture Club of Saint Louis.

First, "Yucutan," photographed by Dr. and Mrs. Walter Jordan. It was a beautiful picture in Kodachrome of the ancient ruins in the hidden cities of Chichen Itza, Uxmal, etc.

Next was a film, also in Kodachrome, of St. Louis, by George Hysore. This film was shown for an admirable reason. It has recently been suggested that the club make a film of St. Louis, depicting its life in all its phases. In other words, make a film of St. Louis that would be a permanent record of how the people of the city live in 1945, a film that in years to come would have historical value. Mr. Hysore's film was screened to give the members an idea for the start of such a club film.

M.M.P.C.

Five distinguished films made up the program for the 12th Annual Gala Night of the Metropolitan Motion Picture Club, held at the Hunter Playhouse, New York City, the evening of May 11.

Topping the list was "In His Own Judgment," by Joseph J. Harley. This film won the Hiram Percy Maxim Award for 1944.

The other films were: "Snow on the Mountains," by Robert P. Kehoe. This film was named one of the Ten Best in Movie Makers Contest of 1944. "Sunstruck," by George Mesaros. It was given an Honorable Mention in the 1944 Movie Makers Contest. "The Little Ones," by George A. Ward. "Windjammer," by Sidney Moritz.

La Casa Movie Club

Three 16mm. and two 35mm. films provided the filmfare for the May meeting of the La Casa Movie Club of Alhambra, California, which will celebrate its eighth birthday this month. Films shown were:

"Gadget Night," by R. A. Battles, 16mm.

"Grand Canyon," 35mm., by C. H. Bodner.

"Vacation Days," 16mm., by Mrs. L. L. Conrad.

"Southern California Views," 35mm., by Mrs. Pearl Hall.

"Eastern Ramblings," 16mm., by Ralph Taylor.

Philadelphia Club

New officers elected by the Philadelphia Cinema Club are:

President, James R. Maucher.
Vice-President, William Brink.
Treasurer, G. C. Kugler.
Secretary, Adolph Pemsel.

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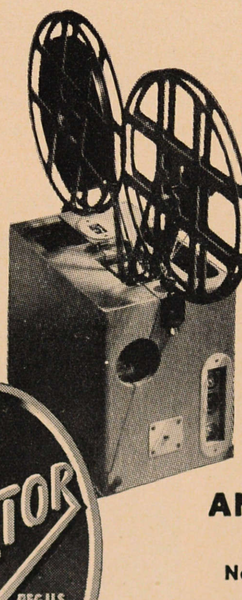

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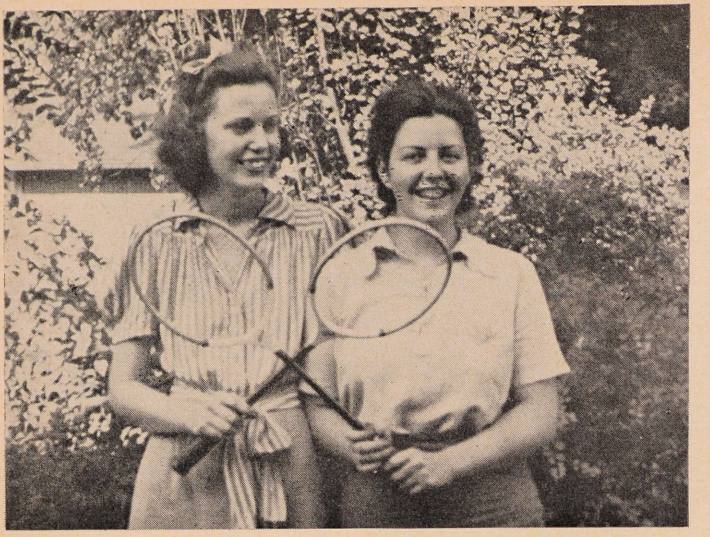
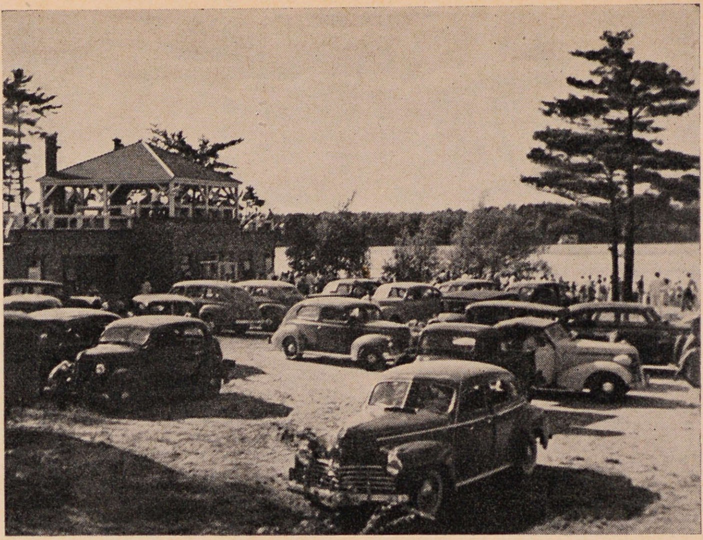




The illustrations on this page are blow-ups from 16mm vacation movies made by the author.

Timely Tips For Wartime Vacations

By JAMES R. OSWALD

WITH present travel conditions pretty much the same, if not slightly darker, than last year, it looks as though adventure seeking vacationists are again this summer going to have to forget about their long awaited cross-country jaunt, ocean cruise, or trip to that "cabin in the pines." And when I mention *wandering vacationists,* I am speaking of *movie makers,* for more than a *few* of these lovers of the outdoors consider their cine equipment an essential part of every journey.

But of this group of traveling filmers, many can only be classed as "luke warm" camera enthusiasts, since their picture taking interest seems to end with the days en route. The remainder of the year the cine camera remains neatly tucked away in the corner of some bureau drawer, cupboard shelf, or other out-of-the-way place, forgotten.

Those who are of the opinion that "there's nothing worth taking around home" are going to be sadly disappointed this summer, unless they awaken to the fact that movie making *begins* at home. These folks might well be compared to the person who "couldn't find the woods because there were too many trees." Now, if never before, they should acquaint themselves with the photographic opportunities of their immediate vicinity.

What *is* there worth taking around home? A look around your own community will best decide that, but the scenes accompanying this article are typical of the many possibilities within easy reach of the pursurer, and may offer a few suggestions.

Take for instance the local zoo. Animals are natural born actors and their amusing antics rate a high priority on your movie "shopping list." The bears, especially, are always good for a laugh and are very "obliging."

Then there are the neighborhood parks and playgrounds. Such shots need not be dull and lifeless, if photographed from the proper approach.

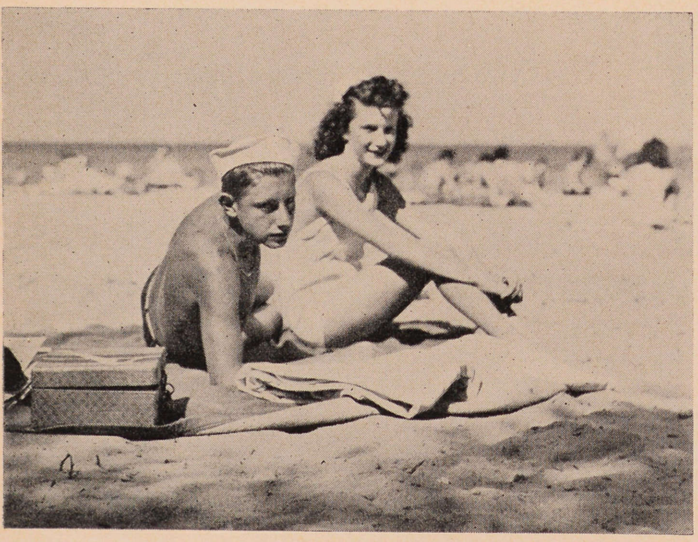
Picnic gatherings are always a source of merriment and movie making. One doesn't have to travel great distances to join in the fun of this good old American custom!

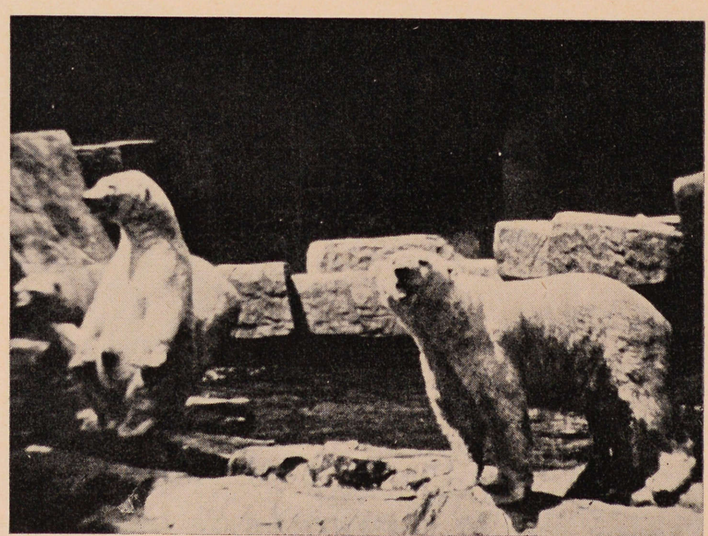
Beach parties . . . and this doesn't necessarily mean the usual "pin-up" and "glamour girl" studies. Search beyond the glimmer of glamour, and your efforts will be rewarded, for straying from the "beaten path."

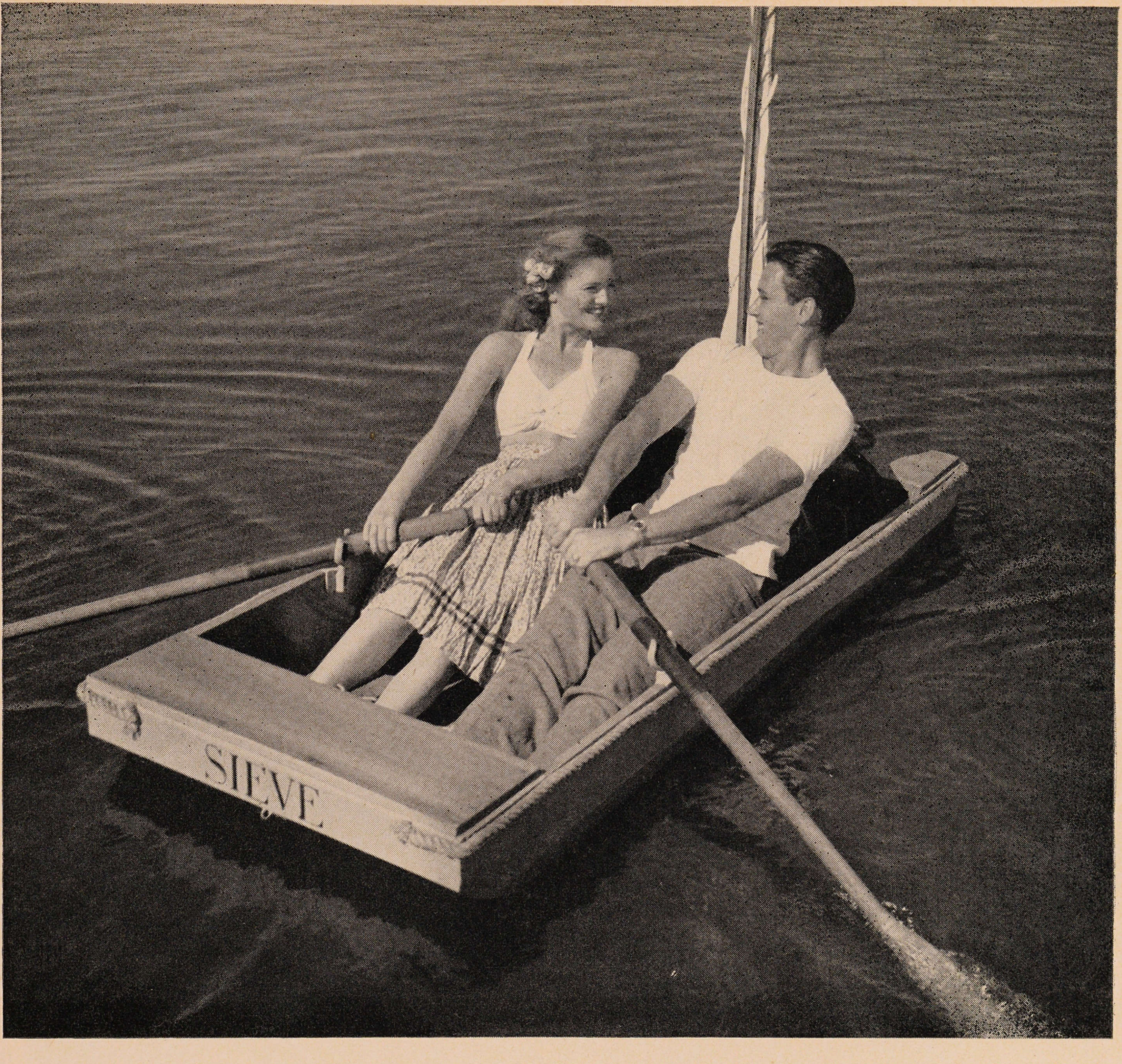
Sporting events and games of all sorts offer plenty of activity for the filmer who is "on his toes." If cleverly handled, lots of enthusiasm and suspense can be whipped up in such scenes, even if those participating in the action are total strangers, and the wide-awake cameraman will want to capture every thrill-packed second.

And so it goes on down the line . . . familiar sights and common place happenings frequently overlooked in the

(Continued on Page 211)







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Activities of A. S. C. Members

AS THIS issue of the CINEMATOGRAPHER goes to press members of the American Society of Cinematographers are photographing the following films:

Columbia Studios

Tony Gaudio is filming "The Bandit of Sherwood Forest," Russell Metty is shooting "Pardon My Past," Franz Planer is director of photography on "I Love a Band Leader," Joseph Walker is making "Some Call It Love."

Metro-Goldwyn-Mayer

Charles Rosher is photographing "Yolanda and the Thief," George Folsey is filming "The Harvey Girls," Harry Stradling is shooting "Early to Wed," Joseph Walker is filming "They Were Expendable," Sidney Wagner is doing "For Better, For Worse," Charles Schoenbaum is filming "Abbott and Costello in Hollywood," Charles Salerno "She Went to the Races," and Len Smith is on location shooting "The Yearling."

Monogram

Harry Neumann is filming "Sunbonnet Sue," and William Sickner is shooting "Song of the Border."

Paramount

Lionel Lindon is filming "Too Good to Be True," Charles Lang is shooting "The Stork Club."

P.R.C.

Ben Kline is shooting "Club Havana," and Jack Greenhalgh is filming "Checkmate."

R.K.O.

Joseph Valentine is filming "Tomorrow is Forever."

20th Century-Fox

Edward Cronjager is filming "Kitten on the Keys," Joseph LaShelle is shooting "Fallen Angel," Leon Shamroy is photographing "Leave Her to Heaven," Harry Jackson and Joe MacDonald are filming "The Enchanted Voyage," and Norbert Brodine is shooting "Now It Can Be Told."

United Artists

Lee Garmes is director of photography and production assistant on "Young Widow," and Hal Rosson is photographing "Duel in the Sun."

Universal

Elwood Bredell is filming "Lady on a Train," Paul Ivano is shooting "Uncle Harry," Charles Van Enger is filming "On Stage, Everybody," and George Robinson is filming "Frontier Gal."

Warner Brothers

Sol Polito is filming "A Stolen Life," Arthur Edeson is filming "The Time, The Place and The Girl," James Wong Howe is photographing "Danger Signal," Carl Guthrie is shooting "Janie Gets Married," and Peverell Marley is filming "The Two Mrs. Carrolls."

A. S. C. Men Record Great War Events

That members of the American Society of Cinematographers are playing a part in the really big events of the war is evidenced by the following letter just received from Captain Lloyd Knechtel of the Signal Corps, who is an ASC member. Knechtel writes:

To Fellow A.S.C. Members:

I thought you might be interested in knowing back in the "old country" that one of your absent members was entrusted with the motion picture coverage of the Nazi surrender in Italy. It was something that all of us over here were looking forward to, and it was really more dramatic than you might imagine. As you may read in the enclosed Stars and Stripes, the German officer didn't like us making movies of him, and he had just cause for being nervous about it. The exposed film was rushed by special plane to London where dupes were made for release in Great Britain. Then the original was flown to Washington for news releases in the States.

Others of the A.S.C. have also recorded historic events over here. Lt. Paul Vogel covered the conference pictures at Malta, and Stanley Cortez was in on the photography of the Crimea conference at Yalta, assisting Major Gaskill, an ex-newsreel man from Boston.

All best wishes to the A.S.C. Keep sending good movies to us overseas.

Lloyd Knechtel,
Captain, Signal Corps.

Greetings from Marine Capt. Henry Freulich

The following letter from Captain Henry Freulich, member of the American Society of Cinematographers, and now Division Photo Officer, 6th Marine Division, has just been received:

Dear fellows:

Just a line to say "hello." We are now permitted to tell our whereabouts. I have been on Okinawa Shima since April 1st. No doubt you all read about this important and successful operation.

Have 38 photographers in our photographic section. A wonderful group of boys who have done a great job. Thank God, none of them has been killed—only one wounded in the leg, and now back with his regiment.

I forgot to say that we are 635 miles from Tokyo.

Best wishes to all of you, and how's about hearing from some of you? Certainly would appreciate some news from home.

HENRY FREULICH.

Note: Henry's address is: Capt. Henry Freulich, Div. Photo Officer, 6th Marine Division, Fleet P.O., San Francisco, Calif.

Aces of the Camera . . .

(Continued from Page 187)

starring Wallace Beery and Raymond Hatton. Then Howard Hughes hired him and placed him in charge of all exterior and aerial photography on "Hell's Angels." He put in another 150 hours of flying on that picture.

Harry quit the air pictures then and went with Multicolor Films, making one-reel shorts for Educational Films. They were called "Romantic Journeys," and Harry was off again on his globe-trotting. He shot Grand, Zion and Bryce Canyons. Then he went to Africa where he went from Casablanca to Tunis by auto. Then he went to advanced posts of the French Foreign Legion in the Atlas Mountains. Next he made a three weeks trip over the Sahara Desert. From there he journeyed to Paris, then on to Germany, making pictures in Bavaria, Munich and from airplanes over the Alps. He went on to London where he photographed that city from the air, and then returned home.

Soon after his return he started making backgrounds for transparencies, mostly exteriors. Shooting these background scenes took Perry to many places. In 1935 he went to England, France, Spain, Italy, Austria and Switzerland for Paramount. In 1936 he went to Europe again to make scenes and backgrounds for Samuel Goldwyn's "Dodsworth." On the same trip he shot scenes for Paramount and several other producers. On that trip he worked in Paris, Vienna, Venice, Naples, Capri, London and Ireland. He was gone five months.

In 1937 he went to Lake Placid for Paramount for scenes for "I Met Her in Paris." He shot scenes from a bobsled while it was going sixty miles an hour down the sled run. In the same year he went to Europe again for Paramount, getting scenes for "Bluebeard's Eighth Wife" in Paris and on the Reviera. In 1938 he went to New York to shoot scenes for Paramount to be used in "Cafe Society" and "Invitation to Happiness."

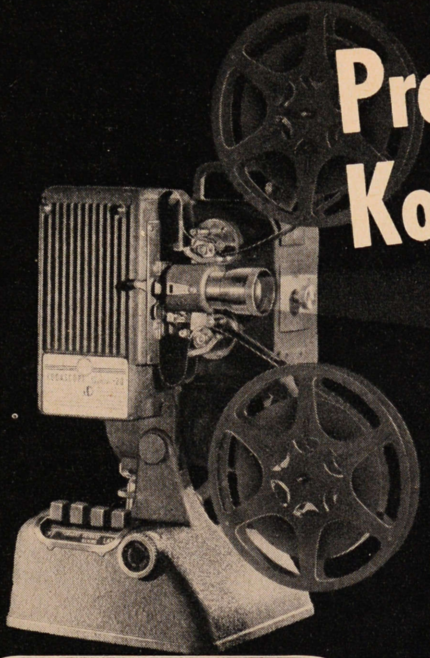
The year 1939 found Harry first in the Bahamas and Florida shooting backgrounds for Paramount's "Honeymoon in Bali," and then in August he arrived in Switzerland with a French camera crew to make scenes for "Rebecca." With the outbreak of the war he returned home, as we explained in the opening paragraphs of this article.

He couldn't seem to stay put in Hollywood, however, and in 1940 he went to New York to do scenes for Paramount's "New York Town," and to Florida, Haiti and Grand Turk Islands looking for locations for Paramount. Then he was off for Randolph Field, Texas, for Paramount's "I Wanted Wings."

In 1941 he went to Palm Beach for R.K.O.'s "My Life With Caroline;" to New Orleans for "Sunny;" to Grand

(Continued on Page 214)

Preview of the new Kodascope Sixteen-20



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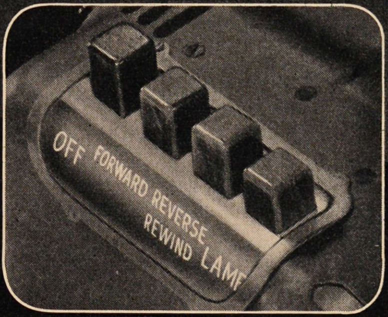
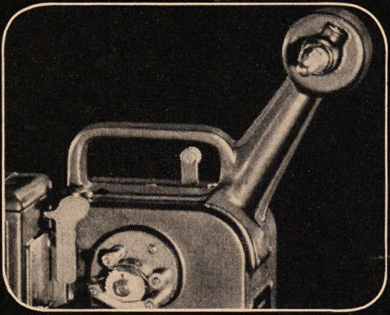
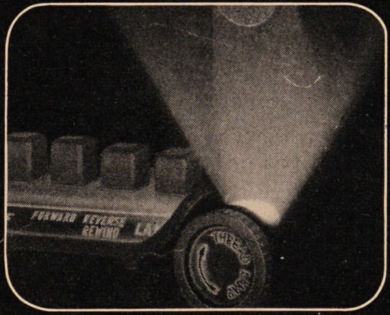


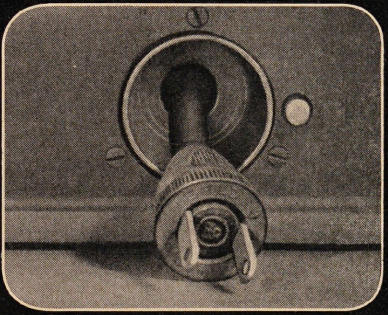
Control at Your Finger Tips



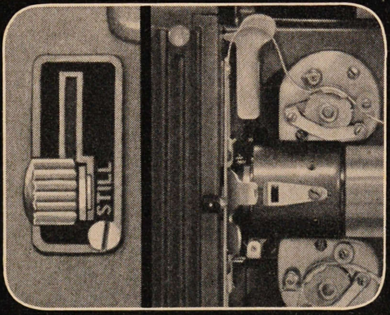
Drive Shafts Are Enclosed



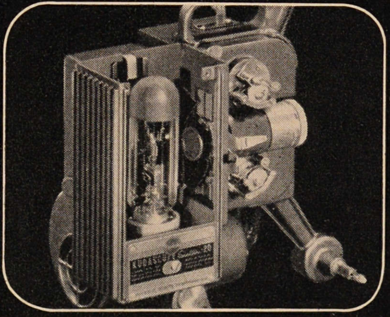
Thread Light—When You Need It



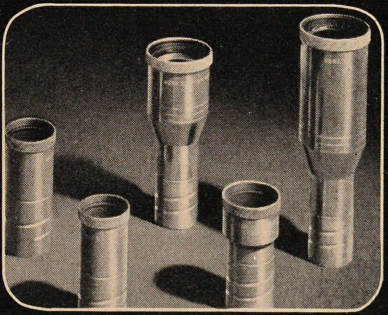
Retractable Power Cord



"Stills"—Simplified Threading



Easy to "Look At"



"Tailor-Made" Projection

Your Ciné-Kodak dealer has the full story

KODAK is, of course, on war work almost exclusively; but the Government has recently approved the production of a limited number of the new Kodascope Sixteen-20's, most of which are being supplied on priorities to schools and business organizations. Keep in touch with your Ciné-Kodak dealer—you may be getting your Sixteen-20 sooner than you think. Price—$174.50, with 50-mm. *f*/1.6 lens and 750-watt lamp. Five accessory lenses and 1000-watt lamp are available.

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OTHER EASTMAN "FIRSTS" WILL FOLLOW

Ciné-Kodak

The Television Camera . . .

(Continued from Page 196)

(2) Focal depth is also determined by the *distance of the camera from the subject.* The greater the distance, the greater the focal depth. On close-ups the focal depth is very shallow. With a prewar type of Iconoscope camera, using a six inch lens set at f/2.8, the focal depth on an extreme close-up may run about two to three inches—not enough to keep both nose and ears in sharp focus! If the camera is moved back ten feet from the subject, the resulting focal depth would be perhaps eighteen to twenty inches. When the camera is moved back to twenty feet, the focal depth in a long shot might be about three feet.

(3) Focal depth can also be changed without moving the camera by *changing the lens.* If a long lens is substituted for a short one, the focal depth of the picture is decreased but the picture is changed as well since the subject appears to be larger and closer to the camera. And if a short lens is substituted for a long one, the focal depth is increased but the subjects in the picture appear smaller.

Perhaps the importance of focal depth can be made clear by the following hypothetical situations in which an Iconoscope with a nine-inch lens set at f/4.5 is used:

Assume that you are directing a television show, and you wish to get a shot of two people seated at a table. You line up a picture which you think will be very nice, shooting at an angle which should make one person appear very large—because he is close to the camera—and the other person small and far away. This seems nice and dramatic in your mind's eye, until you see the result on the screen. If you have one person in sharp focus, the other one is blurred and out of focus—and vice versa. The shot appears to be impossible, because your depth of focus is too shallow. One person is six feet from the camera, and the other one is nine feet—three feet farther away.

"And you see," says your cameraman, "our depth of focus is only fourteen inches."

Possibly the shot still can be used, but you will have to make *one or more* of the following adjustments:

(1) Use a smaller stop opening on your cameras. But to do this you will have to (a) greatly increase the amount of light on the set, or (b) get a more sensitive camera, or (c) try to compensate for the loss of light by having your control engineer raise the "gain," increase the power of the circuits amplifying the picture. He will undoubtedly object, because the picture may be too weak and too washed out to transmit the way he wants it to be transmitted. Nevertheless, maybe he can squeeze just a little bit more out of the system.

(2) Move your camera farther away from the subjects, increasing your depth of focus but also bringing other objects into view—which may or may not upset the purpose of the shot.

(3) Change lenses, if you cannot move your camera back. Use a shorter, wider-angled lens, which will include a greater area in the picture, make the subjects seem further away and give you more depth of focus.

(4) "Split" the focus of your camera. Instead of trying to keep one person in perfect, sharp focus at the expense of losing the other, focus your camera for a point midway between the two, which may give you a reasonably acceptable focus on both subjects.

(5) Change the position of your camera in relation to the subjects, or change their positions with relation to the camera. In this way you can bring both of them closer together and within the focal depth of the camera—which, of course, may make the shot look awfully stiff.

Any summary of outstanding characteristics of early cameras should also include the fact that the Iconoscopes and Image Dissectors transmitted a reasonably high amount of definition. The Iconoscope, although more sensitive than the Image Dissector, needs extra amplifying tubes in the pickup head itself, which increases the size and weight of the camera. In general, cameras of the 1935-45 decade were clumsy, heavy, bulky, and awkward to handle because of the heavy coaxial cable which links the camera to the control room. They were not often designed from a practical cameraman's point of view, focusing devices being awkward, view finders unreliable and lacking in certain desirable qualities, and seating arrangements for the cameraman uncomfortable or nonexistant. These characteristics introduced a problem of fatigue: if a cameraman kept his camera highly mobile, he soon became physically tired and had to be replaced.

These are the outstanding characteristics of the television camera, circa 1935-45. Now let us see how it can be improved. What are some of the characteristics of the ideal television camera?

Movement in Movies

(Continued from Page 194)

a wonderful, vast field that has barely been touched. As Vorkapich says, the world of color is the domain of painting, the world of tone is the province of music, and the world of movement is the characteristic of film. The full range of movie movement—by means of cutting, dissolving, moving shots, pan shots, slow motion, reverse action and the many other things the camera can do—can be used to probe the most complex and subtle moods and situations. Movement does not have to deal only with physical movement. It can deal also with action within people.

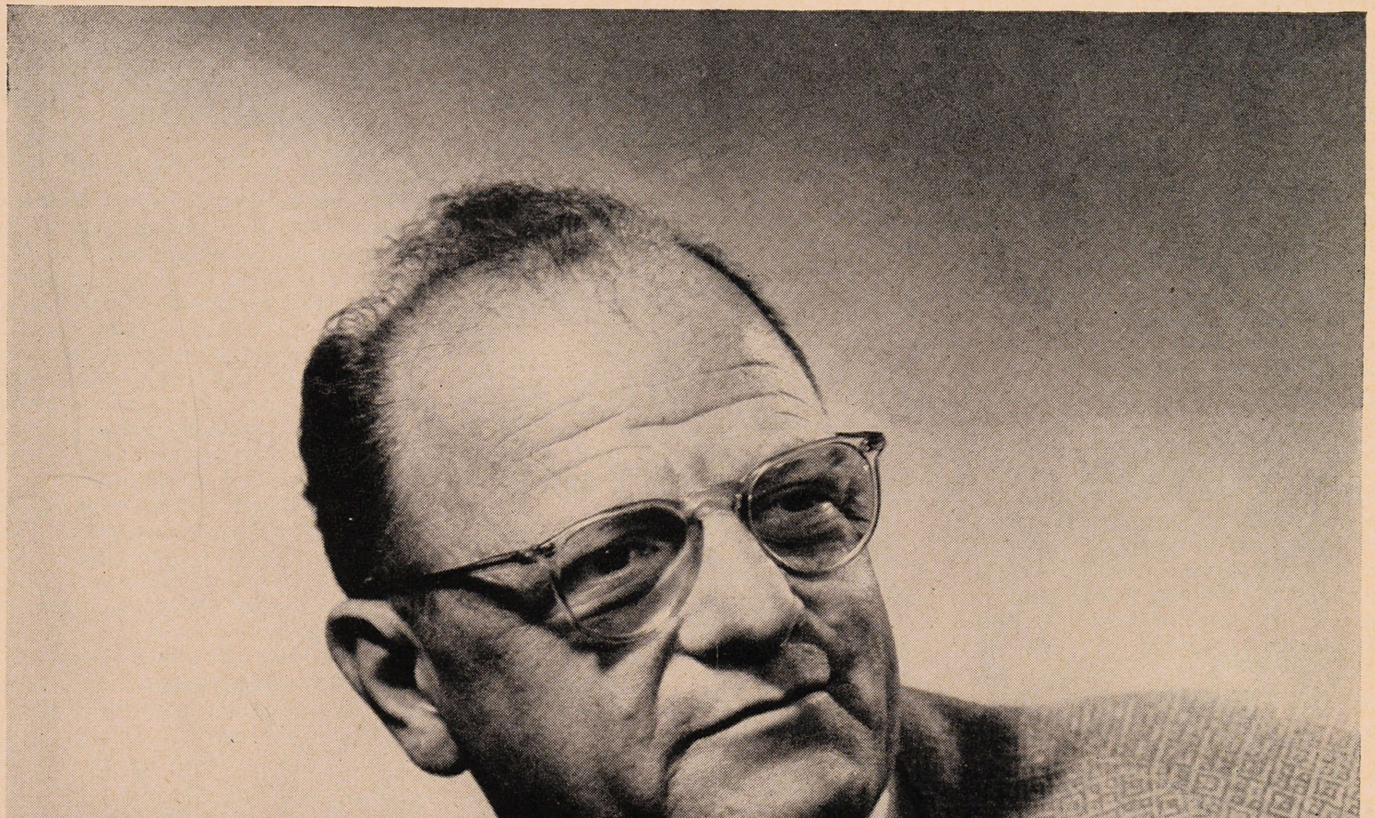
Vorkapich says that the trouble with motion picture scripts today is they are written in terms of theatrical dialogue. He would like to see a scenario written in two sections. On one side of the page would be the dialogue, and on the other would be a detailed resume of the action and camera manipulation. He says that if the action does not speak for itself, then something is lacking in the script. Such a scenario technique would require that the writer be thoroughly trained in the A, B, C's of motion picture production before he sits down at the typewriter. It would mean that the writer would think visually instead of from a literary standpoint, and would consult experienced cameramen, yes, would practically collaborate with cameramen in writing the action for his story.

Another requirement Vorkapich makes of a movie is rhythm. Not the kind of rhythm that is musical or even, but an over-all rhythm in a picture that arises out of the juxtaposition of the different shots. I will cite another instance, the current picture, "The Clock." To my mind, the most moving scene in the picture is one that is told solely in terms of the camera and that could have been only briefly indicated by the writers. The boy and girl are in the park at night. Suddenly, looking at one another, they are drawn toward each other as if by some inner compulsion. The director and cameraman handled this scene almost as if it were a ballet. By some dexterous cutting and camera movement, and without a word being spoken, the couple move towards each other tremulously and gravely. It was not the usual love scene that is seen on the screen. Handled with talent and imagination, it had overtones that words could not approximate. The result was the over-all combination of the different shots, the rhythm of the scene.

"Montage," Vorkapich says, "is French for any kind of mounting, assembling, putting together. Like many other words it has a general and a special meaning. Thus, the making of a complete picture (assembling and putting together of individual strips of film) is Montage in its general meaning. So far, the possibilities of montage have been barely touched upon. Practically, it has proved to be a valuable economical device in regular productions. Artistically it could become a true filmic form of expression. Montage is not just a jumble of camera tricks. They are tricks only when they are used for their own sake and not as a most graphic means of expressing something. Montage is in reality a film style of its own, and a very elastic one at that, which uses purely visual means, including all the possibilities of the camera, of movement, of rhythm, and of cutting to express feeling and thoughts to tell stories."

"Arcs Put Snap in Black-and-White Photography;

I wouldn't be without them." Joseph Ruttenberg, A. S. C.



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New Repeating Flash Tube For Night Aerial Photography Announced

Details concerning the electric illumination of an astounding new photoflash camera, now in use by the armed forces, and designed to take clear bird's-eye pictures by night from reconnaissance planes has been revealed by Lamp Department of General Electric at Nela Park. The new and revolutionary light source has been designated as the G-E Mazda Flash Tube.

The night aerial photoflash camera, of which the repeating "flash tube" is a part, played a significant role in the success of the Normandy Invasion and in subsequent operations in the European theater. It is a complicated device which required several years of development on the part of Dr. Harold E. Edgerton, professor of electrical engineering at Massachusetts Institute of Technology; technicians of the Photographic Laboratory, Air Technical Service Command headquarters, Wright Field, Ohio; and engineers at the Nela Park laboratories.

Phenomenal feature of the "flying flash camera" is its ability to "shoot" earthward successive flashes, each as brilliant as a bolt of lightning—and all made possible at the touch of a button.

For proper operation, the G-E Mazda Flash Tube is plugged into any one of three rather complex electronic devices designed for its use. Purpose of the auxiliary system is to pile up a tremendous amount of electrical energy which, when released suddenly into the flash tube, results in a blinding "explosion of light."

Although each flash of the new flash tube is many hundred times as bright as that from flash bulbs used by news photographers, its duration is confined to a mere one thousandth of a second. So great, however, is the heat developed, that a steady blast of air must be forced through the jacket to cool the coil.

Accompanying each flash is a distinct and startling "pop!" caused by the sudden expansion (caused by heat) of surrounding air. Despite the forced cooling of the light source, heat from the flash is so intense that it chars wood at a distance of a foot or so from the tube.

Equipment of B-29 Photographic Reconnaisance Planes Revealed

Details of equipment of B-29 photographic reconnaissance planes now in action in the Pacific have been released by the Army Air Forces at Wright Field, Dayton, Ohio, as follows:

Designed by the Air Technical Service Command in conjunction with Fairchild Camera & Instrument Corp., New York, and Boeing Aircraft Company, Seattle, the superfortress photo plane, designated the F-13A, carries more cameras than any other reconnaissance aircraft, without sacrificing any of the B-29's deadly firepower.

It can deliver almost as much weight of bombs as the B-29, and matches its range and speed. It employs a complete combat crew of 11, plus camera technicians.

Its battery of six cameras makes the F-13A the most versatile of reconnaissance planes. For photo-mapping territory, the F-13A has a tri-metrogon installation of three Fairchild K-17 mapping cameras mounted side by side, one pointed down for vertical pictures and the others flanking it, pointed toward the horizon for obliques. The trimetrogen set-up photographs a strip 20 to 30 miles wide, depending on the altitude at which the plane is flying.

For highly-detailed reconnaissance and photo interpretation work, the F-13A carries two Fairchild K-22 cameras in a split vertical mount. These cameras photograph particular targets, such as railroad yards, harbor facilities, gun installations or industrial plants. In contrast to the tri-metrogon, the area covered by split vertical cameras at 20,000 feet is only about two miles wide.

The sixth camera is a Fairchild K-18, with an assignment similar to that of the split vertical pair, but covering a wider range and taking a larger negative. It is used for close-ups of specific areas mapped by the tri-metrogen, and for photographing target areas which do not require the pin-point detail of the split vertical.

The F-13A can also be equipped—and is, in many cases—with a Fairchild K-19, designed for night photography with aerial flash bombs.

The K-17, K-19 and K-22 cameras make 9" x 9" negatives, and the K-18 has a 9" x 18" negative size. Film is fed from rolls up to 390 feet in length in special Fairchild magazines.

On routine missions, the F-13A's cameras can take more than 5,000 separate exposures, using enough film to make 7,500 rolls of film for ordinary box cameras.

Many Technical Papers Read at S.M.P.E. Meeting

Among the many interesting technical papers presented at the 57th Semi-Annual Technical Conference of the Society of Motion Picture Engineers, held in Hollywood May 14-18, the most important to cinematographers was the paper presented by Charles G. Clarke, A.S.C., on "Practical Utilization of Monopack Film."

Clarke explained Eastman Monopack use in the film of "Thunderhead" for 20th Century-Fox. He stated that every scene, including interior sequences, process shots, special effects and all exterior scenes were made on Monopack film. He dealt with the problems encountered because of variations in light conditions and extremely wide range of background material, and explained production techniques used and the benefits obtained by using this method of making motion pictures in color. Inasmuch as "Thunderhead" is the first major studio feature film shot entirely on Monopack, Clarke's paper was extremely important. (Note: As soon as it can be arranged with the S.M.P.E., Mr. Clarke's paper will be published in the American Cinematographer.—The Ed.

Among the other papers read, the following were of particular interest in the field of cinematography: "The Printing of 16mm. Kodachrome Duplicates," by R. M. Evans, Eastman Kodak Company; "Machine Processing of Ansco Color Film," by J. L. Forrest, Ansco; "The Filing and Cataloguing of Motion Picture Film," by C. M. Effinger, 20th Century-Fox; "The Projection Life of Film," by R. M. Talbot, Eastman Kodak Company; "DuPont Fine Grain Sound Films," by N. W. Moyse, E. I. DuPont de Nemours & Co.; "A New Photographic Developer for Picture Negative," by J. R. Alburger; "An Intensity Scale Sensitometer Based on the Dissipation of Light Along the Sides of a Tube," by Paul Zeff, Columbia Pictures; "Positive Vari-Focal View Finder for Motion Picture Cameras," by Dr. F. G. Back; "Film—the Backbone of Television Programming," by R. B. Austrian; "Television vs. Motion Picture Practices," by Klaus Landsberg; "The Recording of Photographic Densities," by J. G. Frane and G. R. Crane, Electrical Research Products Division, Western Electric Co.; "Variable Area Release From Variable Density Original Sound Track," by John Livadary and S. J. Twinning, Columbia Pictures; "Cinemicrography in Biological Research," by R. McV. Weston, England, and a demonstration lecture on "The Problems of Amateur Color Photography," by R. M. Evans, Eastman Kodak Company.

Beach-Head Canteens

Three hours after the initial landing on Leyte, P. I., American Red Cross men had established beach-head canteens serving coffee and other refreshments.

Chicago Projectionists Study Television

Definitely realizing the importance of the picturization of current events and incidents on the screen through television, moving picture operator locals in key cities throughout the country are expected to follow the lead of Chicago local, No. 110, Moving Picture Operators' Union, which has authorized an intensive study of radio-electronics and television for its members.

More than 100 members of the Chicago local are included in the first class now receiving instructions at DeForest's Training, Inc., Chicago, pioneer in the teaching of industrial subjects with the aid of motion pictures. One or more additional classes will soon be formed. Eventually all movie operators in the Chicago area, numbering more than 300, will take the course, according to Eugene J. Atkinson, business agent of the Chicago local. DeForest for years has included motion picture sound and television in its resident and home study courses. More than 4,000 DeForest trained technicians are operating motion picture equipment, doing advanced electronic work for the armed forces, and holding key jobs in the industries manufacturing critical radio and electronic equipment.

Motion picture union officials for several months have been studying the possibility of television in metropolitan theaters and the effect its adoption would have on present-day operators. Finally it was decided to prepare for this eventuality by arranging for a course in television for every operator now employed in the Chicago area.

After examining several radio-electronic-television courses now available, it was decided to ask DeForest's Training to outline a course in radio-electronics in which the emphasis is to be put on television. As a result of conferences with William C. DeVry, president of DeVry Corporation, and T. J. LaFeber, general manager of DeForest's Training, Inc., union officials decided to adopt the course prepared by DeForest's Training as the official course for Chicago union members. This course is prepared under the direction of Dr. Lee DeForest, inventor of the Audion tube which made radio possible.

The DeForest course covers a period of 24 weeks. In addition to four hours a week at DeForest's Chicago laboratory, each member of the class completes a required amount of home work, which includes motion picture training films, in which method of industrial teaching DeForests is a pioneer.

Medical Kits For Prisoners

Red Cross medical kits for prisoners of war contain standard preparations in quantities sufficient for 100 men for one month.

They Get Around

Two far-flung outposts of the motion picture industry have recently acquired new DeVry 35mm. projectors. Norman Olsen, manager of DeVry Corporation's export department, announces the installation of DeVry projectors in a new theatre at Tananarive, Madagascar, and in the Lyric theatre at Kodiak, Alaska.

Kansas On Screen

"Fertile Frontiers," a new 16mm. sound motion picture, in full color, is now ready for distribution, on a nationwide basis, by The Princeton Film Center, Princeton, New Jersey.

This 30 minute film tells an interesting and instructive story of the agricultural importance, the natural resources and the industrial development of Kansas, one of the great states of the Middle West.

16-1966 DeVry 16mm sound-on film projector.

Separate amplifier and speaker provides portable P.A. facilities.

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A Method of Film Conservation

(Continued from Page 189)

ture will not appear as brilliant. This reduction in light is compensated by the use of a more efficient projector lamp and/or lens of about an f:2.0 rating in combination with a projector shutter of the conventional type comprising two adjustable shutter blades which reduce or increase the shutter blade areas from 0 to 5 degrees; thereby transmitting a greater amount of light onto the motion picture screen. These shutter blades may be adjusted and locked into proper position individually.

In order to project these "reduced" picture frames to standard, full screen sizes, a standard (conventional) type projector lens of a shorter focal length is used which "blows-up" or enlarges the reduced pictures approximately forty percent. It is assumed therefore, that the grain effect on the screen will also be increased, which an expert technician might detect by comparison under ordinary conditions, since graininess (on the motion picture screen) appears in the form of tiny, scattered specks that dance about, giving a "boiling" effect; particularly noticeable in the lighter, middle-tone areas of uniform density. The best solution to avoid graininess then, is to choose a standard film of slower emulsion speed and one with less grain. Recent advances in emulsion manufacture have made it possible to increase the speed of an emulsion without increasing its graininess. For example, when a slow-emulsion, fine-grain film with a resolving power of 110 or 150 lines per millimeter is used, graininess is then far less apparent; and, even less noticeable again, when an effective fine-grain developer is used in the processing. With respect to color film, there would be no grain problem involved.

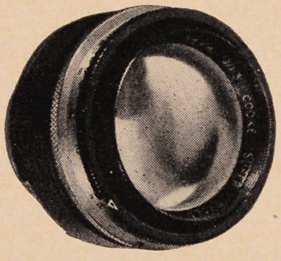
It is generally accepted that Television will assume tremendous proportions in the post-war era, and since my invention is ideal in every respect for telecasting, because no enlargement is required in telecasting, it offers Television companies as manifold advantages as it does the motion picture industries.

Furthermore, it is my contention that color may ultimately replace black and white motion pictures as completely as "Talkies" did silent pictures. Since graininess is no problem with color film, the economy effected by my invention should open the door to a vast expansion in demand for color film by making color film available to innumerable users of 35 and 16 millimeter equipment, otherwise heretofore unable to afford it, particularly when several new and greatly simplified "mono-pack" color films will be available in the very near future. Therefore, in producing colored motion pictures with my method, standard "mono-pack" type color film is preferred in photographing, printing and projecting, utilizing the identical methods and procedures heretofore described.

An auxiliary, adjustable masking device comprising two pair of metal leaves arranged at right angles to each other, which functions as an iris and yet maintains a three to four ratio as to the height and width of an 8, 16, 35 or 70 millimeter "Academy" picture frame, and, which is mounted in or onto a projector lens, is to be used in cases where precision screen size "verniering" is required or in cases where a projector design will not permit a removable type aperture plate.

An ordinary type of splice may be used with any method and/or process, but in order to eliminate the destruction of any portions of the picture emulsions by scraping away portions when splicing in the customary manner, a special "butt-end" type splice is employed. The ends of the processed "reduced image" film are placed end to end against one another without any over-lap occurring; then, the two ends of the films are joined together by cementing a clear piece of film embodying at least two or more sprocket holes on either side of the piece of clear film, with the non-emulsion sides facing each other. A splice of this type is very serviceable and may be re-spliced without marring or destroying any portion of the picture or sound emulsion, and usually without any added loss of the film.

Should it be desired to keep the alternate picture frames of the two sequences in an upright rather than an inverted position in relation to each other, it will then be necessary to rewind both the negative and positive films.



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New Filmosound Library Releases Announced by B.&H

NEVER A DULL MOMENT (Universal)
No. 2566 6 reels

A zany comedy with music—and very well named. The "Three Funny Bunnies" are supposed to double as jewel thieves but fail to learn the crooks' cues and routines. (Ritz Bros., Frances Langford) Available from May 19, 1945, for approved non-theatrical audiences.

PHANTOM LADY (Universal)
No. 2560 9 reels

A casual, passing acquaintance has to be found in order that an innocent man be freed of a murder charge. (Ella Raines, Franchot Tone, Alan Curtis) Available from July 28, 1945, for approved non-theatrical audiences.

SING A JINGLE (Universal)
No. 2559 6 reels

Ace radio crooner drops out of sight when army "physical" rejects him after big publicity build-up, and is re-discovered putting on morale show in war plant, where he is regular employee. (Allan Jones, June Vincent, Jerome Cowan) Available from July 7, 1945, for approved non-theatrical audiences.

Bell & Howell Service Craftsman Trailer Announced

J. H. McNabb, right, President of Bell & Howell Co., and E. K. Stoeppelwerth of Pictosound Movie Service, owner of first B&H Mobile Service Unit about to start on its maiden trip.

First of a fleet of mechanically-equipped service trailers which will provide door-to-door service for users of Bell & Howell Co. equipment was exhibited to the public in Chicago last month.

The trailers are part of Bell & Howell's postwar program to provide skilled maintenance service to schools, churches, commercial firms, organizations, and other users of its 16mm. sound and silent movie projection equipment. The trailers, each to be in charge of a graduate of its training school, will operate on a regular schedule so that equipment can be serviced periodically.

The trailers also will be equipped with a good supply of 16mm. film from Bell & Howell's rental library, as well as equipment for film splicing and repairs.

Other trailer units will be added as rapidly as postwar conversion will permit, according to J. H. McNabb, president. The company plans eventually to have every section of the country under its traveling trailer program.

First of the units has gone into service for Pictosound Movie Service of St. Louis, and will be manned by a graduate electrical engineer who has also completed the service course at the Bell & Howell factory. The territory of Pictosound Movie Service includes Southern Illinois, Eastern Missouri, and metropolitan St. Louis. Its officials believe they will need from three to five additional trailers to properly service their territory when the program is in full stride.

Timely Tips for Wartime Vacations

(Continued from Page 202)

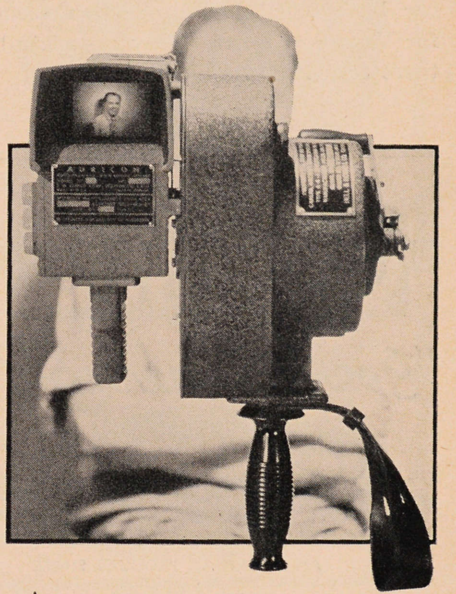
movie maker's quest for "adventure." Yet these scenes are the very ones that "make" a movie, and hold their entertainment value indefinitely, if photographed from a "human interest" standpoint.

Being able to judge worth while movie material when one sees it comes from a mixture of actual experience and good common sense. Still life subjects, landscapes, family groups, etc., belong in the "snapshot" category. Lacking action, an ordinary "still" camera will amply fill the bill for such scenes, although once in a while scenic views may be intermixed with action shots to good advantage, especially when filming in Kodachrome. So in spending your time lolling around home this summer, above all, don't let your interest in movie making be spoiled by a wartime vacation.

Johnson to Fairchild

Oliver F. Johnson, who has been with OPA as executive officer for field operations, has joined Fairchild Camera & Instrument Corp., New York, photographic equipment manufacturers. He will do market research and postwar sales and distribution planning.

a u r i c o n
AUTO-PARALLAX® VIEW-RANGE
Camera FINDER



A precision optical instrument, the Auricon EIF-20 Camera Finder combines range finder and view finder; shows a large upright picture, needle sharp and correct right to left. Parallax is automatically adjusted while focusing, at all distances from four feet to infinity.

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We design and manufacture motion picture equipment to special order, for essential purposes. Your inquiries are invited.

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MANUFACTURERS OF SOUND-ON-FILM RECORDING EQUIPMENT SINCE 1931

Vanguard Sends Cameramen to South America

Greg Toland, A.S.C., and R. O. Binger, A.S.C., are in Rio de Janiero photographing background and production scenes for Vanguard Films. They expect to be there for at least a month.

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speeds f:1.8 and f:2.3

standard focal lengths for 16 and 35 mm. movie cameras. For definition, quality and finest detail in black-and-white and color movies.

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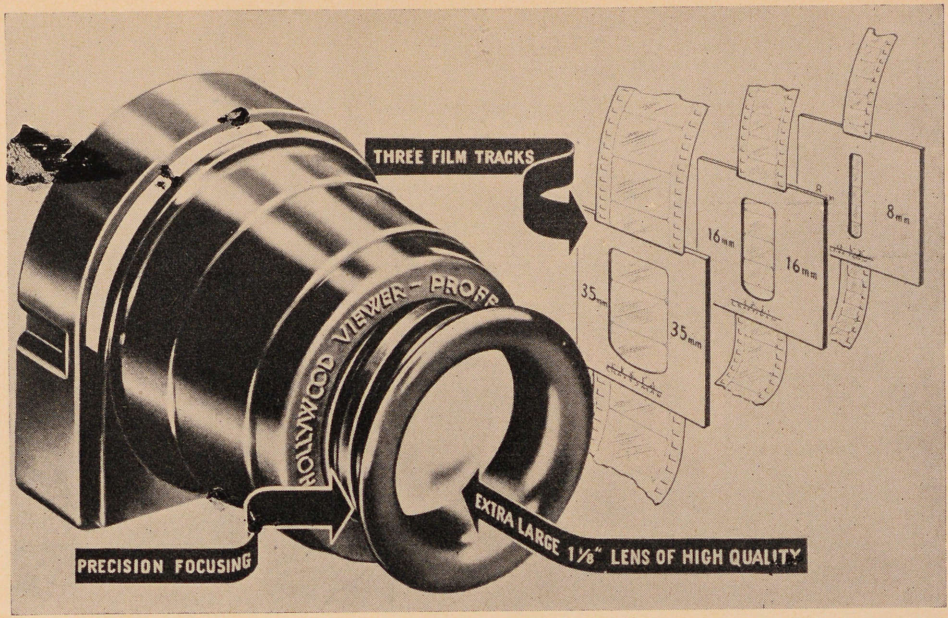
AC-6

Professional Model Hollywood Viewer Is Announced



A high quality ground and polished lens, with extra large covering capacity and extraordinary magnification, is a feature of the new Professional Model Hollywood Viewer just announced by Craftsmen's Guild, 1668 N. Van Ness Ave., Hollywood 28, Calif. This lens is so large that the entire picture appears crystal clear, with no cutting of corners.

Another feature of this plastic viewer is the precision with which the lens can be focused by means of the spiral groove molded into the lens mount. The viewer will take any thickness of 2 x 2 inch slides, in cardboard, glass or metal mounts, and each viewer comes equipped with three film tracks, for 35mm., 16mm., and 8mm. film strips.

35mm. transparencies, viewed in the Professional Model Hollywood Viewer, appear as large as they could if projected to cover a screen eight feet wide at a distance of ten feet. These little viewers are extremely useful to color slide enthusiasts; they also are in demand for school and college students in visual education. Dentists use them for showing full color views of their products.

DeVry Postwar Selling to Be Mobile as Well as Audio-Visual

Immediate adaption by DeVry Corporation, pioneer Chicago manufacturers of motion picture sound equipment, of postwar sales plans built around the use of trailer-housed sales demonstrating units is announced by William C. DeVry. Thus, DeVry postwar selling will have the advantage of maximum mobility as well as that of sight and sound.

DeVry trailer units will be equipped to give on-the-ground demonstrations of all types of audio-visual teaching and training equipment in remote country schools, theatres, businesses, and other organizations as well as those in major cities. This equipment includes heavy duty professional theatre projectors, semi-portable and portable 35mm. theatre and auditorium sound-on-film projectors, 16mm. portable sound-on-film and silent projectors, stationary and portable sound systems, slide and film strip projectors, stereopticons, microphones, turntables, projection screens and related equipment and accessories. The equipment also includes 35mm. and 16mm. motion picture cameras, as well as a representative library of DeVry 16mm. educational and entertainment films and DeVry Filmsets.

Whitmore Promoted

Will Whitmore, advertising supervisor of the Western Electric Company, has been named advertising manager to succeed H. W. Forster, deceased, according to an announcement today (May 1) by F. B. Wright, the Company's director of public relations.

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DeVry Gets Fifth Army-Navy "E" Award

DeVry Corporation, Chicago, has been awarded its fifth consecutive Army-Navy "E" for continued excellence in the production of motion picture sound equipment and secret electronic training devices for the armed forces.

Previously the only manufacturer of motion picture sound equipment to have been awarded four consecutive "E" citations, DeVry now joins the select few among the nation's producers of vital war goods privileged to fly the coveted 5-star banner.

Eastman Announces It Has No Television Program

Because of recent published reports concerning the Eastman Kodak Company and television activities, the Eastman Company has issued the following official statement clarifying its position:

"When Edison was working on a new idea—motion pictures—he used Eastman film for the completion of his invention. Also, in building his motion-picture camera, Edison used parts of a No. 1 Kodak.

"When Roentgen discovered x-rays, Eastman plates were quickly put to use in recording the new shadow pictures.

"When other developments have occurred requiring photographic materials or equipment, Kodak has studied the needs and made supplies available.

"With television arousing new interest, it is appropriate to say that the Eastman Kodak Company hopes to be ready to provide whatever photographic and optical supplies the television industry may require. The present Kodak relationship to the television field is an exploratory one, with the company in the stage of learning what film, apparatus, and lenses may be required.

"Contrary to recent published speculations on the subject, Kodak is doing no development work on television equipment nor has it any 'program' along that line; . . . but this company, as the largest photographic manufacturer, is keeping its eyes open to see how its products may fit into the needs of the new industry."

"Flame Facts"

"Flame Facts," a 16mm. sound motion picture, has just been made available to all types of non-theatrical film audiences by The Princeton Film Center, Princeton, New Jersey.

Designed to teach the correct use of fire extinguishers, in an emergency, this 20 minute film, in full color, explains how to determine the three main types of blazes, and how each can be extinguished most effectively.

"Flame Facts" is a valuable fire prevention aid for schools and colleges; hospitals, hotels and public building employees; fire departments, clubs, industrial plants and other adult groups.

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Aces of the Camera . . .

(Continued from Page 204)

Turk Islands and Nassau for Paramount's "Bahamas Passage;" and he also worked on "Fly By Night."

In 1942 R.K.O. sent him to New York and Miami to make scenes and background shots for "Big Street." That finished they sent him on a similar stint to New York and Newport, R. I., in connection with the film, "The Navy Comes Through." As soon as he finished that he went to New Mexico and Texas for flying shots for R.K.O.'s "Bombadier." In the summer of 1942 he went to Halifax, Nova Scotia, for Universal shooting on "Corvettes in Action." Incidentally, he saw some action while on that assignment, making six convoy trips on destroyers and corvettes in the Atlantic.

By that time two of Harry's sons had gone into the service, so he decided he wanted to stay at home with Mrs. Perry, so he turned down several location trips and accepted a steady position with Farciot Edouart at Paramount on interiors, doing background process work, at which he is an expert. Since starting the inside job he has worked on background process scenes on "China," "So Proudly We Hail," "The Uninvited," "Hour Before Dawn," "I Love a Soldier," "Practically Yours," "'Till We Meet Again," "And Now Tomorrow," "Here Comes the Waves," "A Medal for Benny," "Salty O'Rourke," "The Lost Weekend," and "Our Hearts Were Young and Gay."

Harry is proud of his boys in the service. Harry, Jr., is in the navy. He has been 28 months at sea in the Atlantic where he is a Radar operator on a carrier. Before entering the navy he was a student at the University of Southern California, where he was the Pacific Coast Collegiate Diving Champion. Tom was at Santa Barbara State College when he enlisted in the Army Air Forces. He had had more than 500 hours in the air as flight engineer on a flying fortress. He is now in the Marianas with a B-29 Bombardment Squadron, and has been in the service two years. Harry's third son, John, is only 15 years old, and is in high school at Beverly Hills.

Perry is a very quiet man whose worst fault is modesty. Trying to get him to talk about himself is a real project. Maybe that's why he has been so successful in his work. Could be.

Helps Prisoners

The International Red Cross Committee watches over the welfare of war prisoners of all countries that have ratified the convention covering this phase of warfare. The Committee's delegates make periodic visits to prisoner of war camps, inspect housing and food, talk to the prisoners' chosen representatives in privacy, ascertain physical and spiritual needs, and see that they are properly cared for.

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And it all adds up to this: The job being done by G. I. projectionists—movie-trained—is just about as big a contribution to military morale as can be imagined. The best evidence is written on the boys' faces . . . when they hear that call of "Movies tonight!"

One of a series of advertisements by KODAK testifying to the achievements of the movies at war

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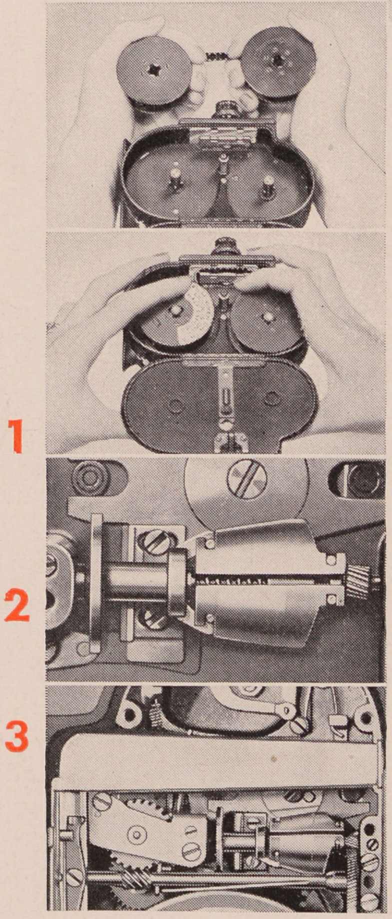
2 **The Filmo Governor** and sturdy spring drive assure uniform film exposure through constant speed.

3 **Built-in Spyglass Viewfinder** is breakproof, dirt-proof, excludes extraneous light; sighting is sure and easy.



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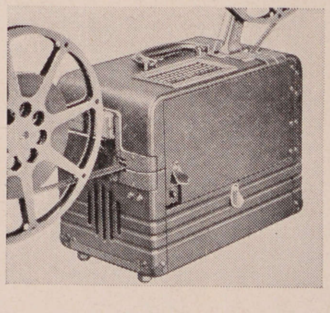

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